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PROCEEDINGS

OF THE

American Pharmaceutical Association

AT THE

NINETEENTH ANNUAL MEETING,

HELD IN

ST. LOUIS, MO.,

SEPTEMBER, 1871.

ALSO THE

CONSTITUTION AND ROLL OF MEMBERS.

PHILADELPHIA:
SHERMAN & CO., PRINTERS.
1872.

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1871-72.

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List of Officers of the Association

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John Meakim,	New York,	1855–56
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John L. Kidwell,	Georgetown, D. C.,	1858–59
Samuel M. Colcord,	Boston,	1859–60
Henry T. Kiersted,	New York,	1860–62
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J. Faris Moore,	Baltimore,	1863–64
William J. M. Gordon,	Cincinnati,	1864–65
Henry W. Lincoln,	Boston,	1865–66
Frederick Stearns,	Detroit, Mich.,	1866–67
John Milhau,	New York,	1867–68
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Richard H. Stabler,	Alexandria, Va.,	1870–71
Enno Sander,	St. Louis, Mo.,	1871–72

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William J. M. Gordon,	Cincinnati,	1860–62
John Milhau,	New York,	1862–63
John M. Maisch,	Philadelphia,	1863–64

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George C. Close,	Brooklyn, N. Y.,	1865–66
Edward Parrish,	Philadelphia,	1866–67
Robert J. Brown,	Leavenworth, Kansas,	1867–68
Ferris Bringhurst,	Wilmington, Del.,	1868–69
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Charles A. Tufts,	Dover, N. H.,	1863–64
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Elijah W. Sackrider,	Cleveland, O.,	1865–66
Ezekiel H. Sargent,	Chicago,	1866–67
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THIRD VICE-PRESIDENTS.

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Henry F. Fish,	Waterbury, Conn.,	1855–56
Henry T. Kiersted,	New York,	1856–57
A. E. Richards,	Plaquemine, La.,	1857–58
Robert Battey,	Rome, Ga.,	1858–59
Edwin O. Gale,	Chicago, Ill.,	1859–60
Theodore Metcalf,	Boston,	1860–62
J. Faris Moore,	Baltimore,	1862–63
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Thomas Hollis,	Boston,	1864–65
Charles A. Heinitsh,	Lancaster, Pa.,	1865–66
John W. Shedden,	New York,	1866–67
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Albert E. Ebert,	Chicago,	1868–69
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Matthew F. Ash,	Jackson, Miss.,	1871–72

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J. S. Aspinwall,	New York,	1856–57
Samuel M. Colcord,	Boston,	1857–59
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RECORDING SECRETARIES.

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Charles Bullock,	Philadelphia,	1859–60
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Peter W. Bedford,	New York,	1862–63
William Evans, Jr.,	Philadelphia,	1863–64
Henry N. Rittenhouse,	Philadelphia,	1864–65
John M. Maisch,	Philadelphia,	1865–72

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Peter W. Bedford,	New York,	1860–62
John M. Maisch,	Philadelphia,	1862–63
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LOCAL SECRETARIES.

Peter Wendover Bedford,	New York,	1866–67
Alfred B. Taylor,	Philadelphia,	1867–68
Henry W. Fuller,	Chicago,	1868–69
J. Faris Moore,	Baltimore,	1869–70
William H. Crawford,	St. Louis, Mo.,	1870–71
Henry C. Gaylord,	Cleveland, O.,	1871–72

LIST OF QUERIES

TO BE REPORTED ON AT THE TWENTIETH ANNUAL MEETING.

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1. What is the best process of assay by which the medicinal value of Aconite Root can be determined?

Accepted by L. M. Rice, of New York City.

2. Can Aloin be prepared by any process which is uniform in its results?

Accepted by Prof. Albert B. Prescott, of Ann Arbor, Mich.

3. How can the Gum Resins, like those of assafœtida and ammoniac, be prepared and kept in stock, so as to render the use of a mortar unnecessary in dispensing them in mixtures?

Accepted by James McBride, of St. Louis, Mo.

4. An essay with practical working formulas for the more popular artificial Mineral Waters.

Referred to Aug. Theod. Moith, of Fishkill, on the Hudson, N. Y.

5. What is the true value, as a vesicant, of the so-called Cantharidate of Potassa? Is it capable of affording a more eligible application than the Ceratum Cantharidis?

Accepted by Charles J. Kadish, of Chicago, Ill.

6. An essay on Neatsfoot Oil, its sources, mode of preparation, characteristics, and adulterations.

Accepted by J. C. Borcherdt, of Chicago, Ill.

7. Do Pumpkin Seeds owe their medicinal properties to a fixed oil, or to another active principle?

Accepted by Charles L. Jefferson, of Philadelphia, Pa.

8. What is the best process for preparing pills of Phosphorus, and protecting them from oxidation?

Accepted by Thomas S. Wiegand, of Philadelphia, Pa.

9. The berries and root of Phytolacca Decandra possess value as a remedy in rheumatism. To what principle can this property be attributed?

Accepted by Charles F. Fredigke, of Chicago, Ill.

10. What attention has been given to the collection of Argol in the vine districts of California? Is it obtainable in sufficient quantities to be remunerative?

Referred to James G. Steele, of San Francisco, Cal.

11. What is the best test process to determine the medicinal value of Rhubarb Root?

Accepted by C. B. R. Hazeltine, of Boston, Mass.

12. Has any attention been given to the preparation of Milk Sugar (Lactin) in the cheese districts of the United States? Can the production be made remunerative?

Accepted by Joseph L. Lemberger, of Lebanon, Pa.

13. What is the best method of avoiding the pectinous principle from Senega in the process for the syrups of that drug?

Accepted by Reinhold Rother, of Chicago, Ill.

14. Is there an eligible process for making a concentrated pulverulent preparation of Senna, fairly representing its active properties and embracing the Cathartic Acid of Dragendorff and Kubly? And will the association of an alkaline salt modify its griping qualities as a purgative?

Accepted by Clemmons Parrish, Philadelphia, Pa.

15. What is the best test of purity for Oleum Erigerontis Canadensis, and what oils are used to adulterate it?

Accepted by E. J. Weeks, Jackson, Mich.

16. What chemical and pharmacal preparations usually furnished by the wholesale manufacturer can be economically and conveniently prepared by the pharmacist?

Accepted by Charles F Fredigke, Chicago, Ill.

17. What is the comparative quality of the different brands of Extract of Liquorice of the market?

Accepted by F. X. Crawley, St. Louis, Mo.

18. Effervescent Granular Salts are coming largely into use. Are they generally what their labels represent them to be? What manipulation is necessary to secure the best results, and what are the best proportions of the ingredients?

Accepted by Justin Steer, St. Louis, Mo.

19. Which of the several hand drug-mills is best adapted to the wants of the pharmacist?

Accepted by Thomas J. Covell, Jersey City, N. J.

20. What are the physical properties of Nitrous Ether? What conditions favor and what prevent its decomposition? What are the best means of ascertaining the proportion of Nitrous Ether in the Spirit of Nitrous Ether?

Accepted by N. Gray Bartlett, Chicago, Ill.

21. What is the source and what is the character of the so-called Burgundy Pitch of the American market?

Accepted by John Guerdan, St. Louis, Mo.

22. To what principle or principles does Cimicifuga Racemosa owe its medicinal properties? Can they be isolated, and does the Cimicifugin (so-called) represent the medicinal virtues of the Root?

Accepted by Charles J. Hood, Lowell, Mass.

23. What is the best arrangement for the dispensing counter, securing convenience in manipulation and economy in space?

Accepted by John F. Hancock, Baltimore, Md.

24. Do the powders and concentrated solutions offered by manufacturers for the preparation of Artificial Mineral Waters yield solutions which correspond in composition to the natural products which they are said to represent?

Referred to Aug. Theod. Moith, Fishkill, on the Hudson, N. Y.

25. To what extent is the adulteration of Butter of Cacao carried? What substances are used as adulterants, and how is their presence detected?

Referred to Henry W. Lincoln, Boston, Mass.

26. Does the sugar coating of Pills impair their solubility? Do the pills containing alkaloids, those of Quinia, Morphia, &c., as furnished by different factors, contain the amounts stated?

Accepted by James R. Mercein, Jersey City, N. J.

27. What is the quality of commercial Copaiba, and how may adulterations and deterioration be detected?

Accepted by Edward S. Kelly, Boston, Mass.

28. Glacial Phosphoric Acid containing large proportions of Silicate and Phosphate of Soda has been observed in European markets What is the quality of the Acid supplied in this country?

Accepted by Prof. Albert B. Prescott, Ann Arbor, Mich.

29. Can the swimming-bladders of the fish of the American lakes be utilized as Isinglass? What amount is it estimated could be furnished from the fisheries of the Northwestern lakes?

Accepted by Prof. George M. Hambright, Chicago, Ill.

30. What is the quality of Iron by Hydrogen found in the market?

Accepted by Thomas Doliber, Boston, Mass.

31. Does Wood Creasote exist in the American market? If not, what is supplied instead?

Accepted by Enno Sander, St. Louis, Mo.

32. Is an improved formula for Soap Liniment needed? How may the officinal formula be advantageously modified?

Accepted by John W. Ehrman, Chicago, Ill.

33. In how far do the Seidlitz Powders of the market agree with the quantities and quality of the formula of the United States Pharmacopœia?

Accepted by Charles W. Grassly, Chicago, Ill.

34. Powdered Blue Pill of the market. How is it prepared, and how does it compare in strength with the officinal Blue Mass?

Accepted by Prof. George F. H. Markoe, Boston, Mass.

35. What is the relative digestive power of the different powdered Pepsins and preparations thereof in the market?

Accepted by Thomas Doliber, Boston, Mass.

36. From what source is American Cod-Liver Oil derived, and who prepares it for the market?

Referred to S. M. Colcord, Boston, Mass.

37. What is the comparative quality of the different brands of Bicarbonate of Soda in the American market?

Accepted by Charles H. Bassett, Boston, Mass.

38. What proportion of the alkaloids, *claimed* by the several manufacturers, are contained in the different Elixirs?

Accepted by Ottmar Eberbach, Ann Arbor, Mich.

39. What are the so-called Resinoids and active principles now so largely

used? Are they uniform in character, as made by different persons, or at different times by the same person? Do they medicinally represent the plants from which they are derived?

Accepted by W. J. M. Gordon, Cincinnati, Ohio.

40. Can the Vegetable Narcotic Extracts be prepared in the form of powder, and thereby secure uniform therapeutical effects?

Accepted by F. Victor Heydenreich, Brooklyn, N. Y.

41. Will a stated percentage of Glycerin added to solid extracts preserve them from drying or change, and thereby secure uniform medicinal results?

Accepted by W. J. M. Gordon, Cincinnati, Ohio.

42. What is the best formula for a Glycerole of Pepsin? Is Glycerin a better solvent for Pepsin than Wine or other menstrua, considered therapeutically and practically?

Accepted by James R. Mercein, Jersey City, N. J.

43. Of what value is Malt Extract (Saccharine) as medicine or nutrition? Does Grape Sugar, Starch, or Dextrin possess the same merit?

Accepted by E. H. Sargent, Chicago, Ill.

44. The commercial value of Glycerin being largely reduced, can it be used with medicinal advantage as a partial substitute for Alcohol and Sugar in the preparation of Tinctures, Fluid Extracts, Elixirs, and Syrups?

Accepted by Joseph Harrop, Leavenworth, Kansas.

45. Are there reasons sufficient to warrant this Association in propounding formulas for unofficinal preparations, with a view to securing uniformity in dispensing?

Accepted by R. J. Brown, Leavenworth, Kansas.

46. It has been suggested that the use of Glycerin in Fluid Extracts is frequently detrimental to their quality, or unnecessary. In what respect is this assertion reliable?

Accepted by George Buck, Chicago, Ill.

47. What is the state of purity of commercial Santonine obtained from various sources?

Accepted by C. Lewis Diehl, Louisville, Ky.

48. Fluid Extract of Sarsaparilla, as prepared by the officinal formula, deposits upon standing. Is it not advisable to use less sugar, and allow some of the alcoholic menstruum to be retained by the finished preparation?

Accepted by J. F. Judge, Cincinnati, Ohio.

49. Vanilla. How can this substance be best exhausted? Give a formula for the preparation of a satisfactory fluid preparation of it.

Accepted by E. P. Nichols, Newark, N. J.

50. Glucose. This substance is now very abundant in the market. What use can be made of it in pharmacy?

Accepted by Joseph M. Hirsh, Chicago, Ill.

51. A plant called Sneeze-weed, growing in the State of Mississippi, is said to be very poisonous to horses. What is its botanical name and its poisonous principles, and can an antidote be suggested to its deleterious effects?

Accepted by Prof. John M. Maisch, Philadelphia, Pa.

52. Who is responsible, the Physician, Pharmacist, or Manufacturer, in dispensing sugar-coated pills or other proprietary remedies?

Accepted by Prof. J. Faris Moore, Baltimore, Md.

53. Spirit of Nitrous Ether varies greatly as obtained from different manufacturers. By what practical process may the proportion of Nitrous Ether in the Spirit be estimated, and is the alcohol strength of the United States Pharmacopœia a proper one?

Accepted by P. W. Bedford, New York City.

54. Does the Vegetable Wax, known in trade as Japan Wax, possess any advantages over Beeswax in pharmaceutical preparations?

Accepted by George C. Close, Brooklyn, N. Y.

55. What are the preliminary educational requirements best adapted to youths expecting to enter stores for the purpose of qualifying themselves for the business of druggist and pharmacist, and what preliminary examination, if any, should be required by the colleges of pharmacy?

Accepted by Prof. Edward Parrish, Philadelphia, Pa.

56. Cantharides have been lately imported into this country from China. Is the insect identical with the European Cantharis Vesicatoria, and what amount of Cantharidin can be obtained from it?

Accepted by Prof. John M. Maisch, Philadelphia, Pa.

57. What proportion of mercury is contained in the Blue Pill of the market?

Continued to Charles H. Bassett, of Boston.

58. What is the quality of Beeswax of the market, and what are the best means of detecting its adulterations?

Continued to John J. Thomsen, of Baltimore.

59. To what does Poke Root (Phytolaccæ Radix) owe its activity? Can the active principle be isolated?

Continued to J. Francis Hancock, of Baltimore.

60. Ammonio-citrate of Bismuth loses its solubility to a great extent by age. Can any other salt of bismuth replace this in the desirable quality of solubility, and at the same time be more stable in composition?

Continued to Prof. George F. H. Markoe, of Boston.

61. To what extent are the Essential Oils adulterated or sophisticated? How may impurities be detected?

Continued to William S. Thompson, of Baltimore.

62. Pancreatic juice has been highly recommended to assist the assimilation of fat in the human stomach. In what manner is the fluid obtained, and what permanent preparation of it can be made that will be suitable for administration?

Continued to J. Henry Hancock, of Baltimore.

63. What is the active principle of Wahoo Bark (Euonymus atropurpureus)?

Continued to Charles E. Dohme, of Baltimore

64. What quantity of Castor Oil is produced annually in the United States, and to what extent is the American oil put up in packages and sold in imitation of the East India oil?

Continued to Francis X. Crawley, of St. Louis, Mo.

65. To what extent may traffic in Fancy Goods, Liquors, and Cigars be regarded as compatible with legitimate Pharmacy?

Continued to Samuel Campbell, of Philadelphia, Pa.

66. Tincture of Blood-root deposits a sediment upon standing. Is the activity of the preparation thereby impaired, and is there a more suitable alcoholic strength for this tincture?

Continued to Louis Dohme, of Baltimore, Md.

67. Granulated Effervescing Compounds are sold by druggists under popular names, and the demand for them is constantly increasing, yet these compounds are known to be different from the preparations represented by the labels. Give a practical process for the preparation of such as are believed to possess merit.

Continued to H. C. Archibald, Philadelphia, Pa.

68. In what respect does deodorized Tincture of Opium differ from the "Elixirs" of Opium in the market? The tincture prepared by the United States Pharmacopœia process gradually deposits a dark-colored sediment. Are any of the active principles thrown down in connection with the deposit?

Continued to Charles E. Dohme, of Baltimore, Md.

69. What is the comparative value of Carbolic Acid, and other disinfectants and antiseptics? Which are the best disinfectants for general use?

Continued to Edward C. Jones, of Philadelphia.

70. Prof. Wormley has isolated two active principles from the yellow Jessamine (Gelsemium sempervirens); one of which he calls Gelseminia, and the other Gelseminic acid. How may these principles be isolated in quantity? What is the antidote to the poisonous effects of this drug?

Referred to Professor Wormley, of Columbus, O.

71. Is the ordinary commercial Alcohol of the market sufficiently free from fusel or grain oil for pharmaceutical use?

Continued to N. Peirpoint, of Young America, Illinois.

72. Eupatorium perfoliatum. An examination of its proximate principles, especially that to which its bitterness is due.

Continued to Joseph M. Hirsh, of Chicago.

73. Pepsin is valued for its medicinal power in connection with disordered digestion. What are the best sources of, and what is the most available process for the preparation of it for medicinal use and for the cuisine?

Continued to S. Mason McCollin, of Philadelphia.

CONTENTS.

PAGE

PREFATORY NOTICE, ... 21

List of Members present at the Nineteenth Annual Meeting, . . 23

MINUTES OF THE NINETEENTH ANNUAL MEETING.

Minutes of the First Session, ... 25

Election of President, pro temp., ... 25

Committee on Credentials appointed, ... 26

Introduction of Mr. Henry B. Brady to the Association, . . 27

Letters of invitation read, ... 27

Report of the Committee on Credentials, ... 28

Objection raised against the admission of the delegate from the School of Pharmacy, University of Michigan, ... 29

Appointment of Committee on the admissibility of this delegate, . 34

Call of roll of members, ... 35

Election of members, ... 35, 43

Reports of Committees received, ... 36

Nominating Committee appointed, ... 37

Report of the Executive Committtee, ... 37

Report of the Permanent Secretary, ... 40

Eulogy of deceased members, ... 42

President's Annual Address, ... 43

Minutes of the Second Session, ... 46

Additional Report of Committee on Credentials, ... 46

Report of Committee on the admissibility of the delegate from the University of Michigan, ... 47

Report of the Treasurer, ... 48

Auditing Committee appointed, ... 50

Report of the Nominating Committee, ... 50

Election of Officers, ... 51

Election of members, ... 52

Committee on Decennial Index appointed, ... 53

Inaugural Address of President Sander, ... 53

Report of Committee on Papers and Queries, ... 54

Report of Committee on Adulteration and Sophistication read, . 59

Discussion on Adulterations, ... 59

Report of Auditing Committee, ... 62

Report of Committee on Photographic Album, ... 62

PAGE

Resolution of invitation to the Medical Profession, . . . 64
Discussion on Internal Revenue Law affecting Pharmacy, . . 64
Committee on Resolutions of New Jersey Pharmaceutical Association appointed, ... 69
Report of Committee on Unofficinal Formulas received, . . 69
Visit to the Exhibition Room, ... 69
Minutes of the Third Session, ... 70
Report of Committee on Legislation read, ... 70
Committee reappointed and increased, ... 70
Committee on Place and Time of next Annual Meeting appointed, 70
Report of Committee on International Pharmaceutical Congress read and discussed, ... 70
Invitation to International Pharmaceutical Congress, . . . 74
Resolution to meet in 1876 in Philadelphia, ... 76
Reply by North German Apothecaries' Society to last year's Address, ... 77
Reading of Special and Volunteer Reports and Essays, . . 79
Discussion on Extract of Beef, ... 79
Resolution of thanks to retiring Officers, ... 82
Resolution to appoint Committee on the Pharmacopœia, . . 82
Minutes of the Fourth Session, ... 82
Reading of Special and Volunteer Reports and Essays, . . 83
Remarks on Suppositories, ... 83
Election of Honorary Members, ... 86
Report of Committee on Resolutions of New Jersey Pharmaceutical Association, ... 86
Committee on Liquor Dealers' license of Apothecaries appointed, 87
Remarks on Glycerin, ... 87
Discussion on Reading of Papers, ... 88
Discussion on Chloral Hydrate, ... 88
Discussion on point of order, ... 92
Committee to consider arrangements for meeting of 1876, . . 95
Remarks on adulterated Olive Oil, ... 95
Remarks on Pharmaceutical Education, ... 96
Report of Committee on Decennial Index, ... 97
Resolution to remit annual dues of certain members, . . . 98
Resolution to revise list of societies, &c., receiving Proceedings, 99
Minutes of the Fifth Session, ... 99
Increase of Committee on Liquor Dealers' license of Apothecaries, 99
Cable message to North German Apothecaries' Society, . . 100
Discussion on penalties for not stamping medicines and perfumery, 100
Committee appointed to report thereon, ... 102
Reading of Special and Volunteer Reports, ... 102
Remarks on Opium produced in the United States, . . . 103
Discussion on Citrate of Magnesia, ... 103
Remarks on Glycerin, ... 106

PAGE

Remarks on Medicated Waters, ... 107
Discussion on time and place of next Annual Meeting, . . . 107
Time and place of the Twentieth Annual Meeting, . . . 111
Election of members, ... 111
Resignation of Chairman of Committee on Adulterations, . . 112
Minutes of the Sixth Session, ... 112
Report of the Committee on the Progress of Pharmacy received, . 112
Disposal of Queries not answered at this meeting, . . . 112
Reading of Special and Volunteer Reports and Essays, . . 113
Remarks on Pareira, ... 113
Amendment to By-Laws proposed, ... 113
Additional Report of Committee on Decennial Index, . . . 114
Discussion on Fluid Extract of Senega, ... 115
Remarks on Pyrethrum roseum, ... 116
Remarks on Extract of Jalap, ... 116
Discussion on Mitchell's still, ... 117
Discussion on phonographic report, ... 119
Election of Officers, ... 120
Discussion on preservation of herbs, ... 121
Committee on Pharmacopœia appointed, ... 124
Resolutions of thanks, ... 124
Election of members, ... 125
Discussion on motion of reconsideration, ... 125
Adjournment, ... 127
Entertainments of visiting members, ... 127

Reports of Committees.

Report on the Progress of Pharmacy, ... 129
I. Pharmacy, ... 135
Apparatus and processes, ... 135
Medicated Waters, ... 143
Decoctions, ... 144
Extracts, ... 145
Confections. Fluid Extracts, ... 147
Liniments. Mixtures, ... 148
Ointments, ... 150
Fatty Oils, ... 152
Essential Oils, ... 154
Pills, ... 157
Powders. Plasters, ... 158
Soaps. Suppositories, ... 159
Syrups, ... 160
Tinctures. Wines, ... 162
Miscellaneous, ... 164

PAGE

II. Pharmaceutical Chemistry, ... 176
Chemistry of Inorganic Bodies, ... 176
Non-Metallic Elements, ... 176
Metallic Elements, ... 197
Organic Chemistry, ... 220
Organic Acids, ... 220
Organic Bases, ... 222
Peculiar Bodies of the Animal Organism, . . . 232
Hydrocarbons, ... 238
Alcohols, ... 241
III. Pharmacognosy, ... 262
Drugs derived from the vegetable kingdom, ... 262
Pharmacognostic Miscellanies, ... 297
Drugs derived from the animal kingdom, ... 311
IV. Pharmaceutical Legislation, Societies, Prize Queries, &c., . 314
V. Necrology, ... 319
VI. Pharmaceutical Literature, ... 321
Report of the Committee on Adulterations and Sophistications, . . 330
I. Drugs and Commercial Products, ... 331
II. Chemicals, ... 339
III. Pharmaceutical Preparations and Miscellaneous Articles, . 347
Report of the Committee on Unofficinal Formulas, ... 350
Report of the Committee on Legislation, ... 353
Report of the State Board of Pharmacy of Rhode Island, . . 356
Laws relating to the Practice of Pharmacy, passed 1871, . . 359
Report of the Committee on Exhibition, ... 375
Report of the Committee on the Drug Market, ... 388
Market prices of Drugs in 1870 and 1871, ... 405

Special and Volunteer Reports and Essays.

I. Pharmacy.
The Drug Business. Its relation to Medication and Pharmacy. By D. C. Robbins, ... 409
On Apprenticeship. By Samuel M. Colcord, ... 418
Pharmaceutical Education. By A. B. Prescott, ... 425
Pharmacy in Canada. By W. Saunders, ... 429
Precautions in Dispensing Poisons. By William C. Bakes, . 436
On the Effects of Glycerin in Pharmaceutical Preparations. By W. J. M. Gordon, ... 439
On Powdered Camphor. By John C. Lowd, ... 441
On Medicated Waters. By Samuel A. D. Sheppard, . . . 442
On Aromatic Sulphuric Acid. By Thomas Doliber, . . . 444
The Morphia Strength of Tincture of Opium. By L. M. Rice, . 447
On the Preparation of Syrups without heat. By L. Orynski, . 451
On Fluid Extract of Senega. By Henry N. Rittenhouse, . 453

PAGE

Note on Fluid Extract of Senega. By Edward R. Squibb, M.D., 454
Note on Cantharides and a Blistering Liquid. By Edward R. Squibb, M.D., ... 457
Note on Officinal Extract of Jalap. By Edward R. Squibb, M.D., 465
On the Solid Alcoholic Extracts of the U. S. Pharmacopœia. By W. Saunders, ... 469
On Suppositories. By R. B. Ferguson, ... 480
Urethral Suppositories. By Joseph L. Lemberger, . . . 482
Artificial Mineral Waters. By Aug. Theod. Moith, . . . 483
Practical Notes and Observations. By George C. Close, . . 487

II. Materia Medica.

Note on the Exports of Virginia, A.D. 1610. By Daniel Hanbury, 491
On the Preservation of Herbs. By Joseph Harrop, . . . 495
Note on Rhubarb. By Edward R. Squibb, M.D., . . . 497
Note on Pareira. By Edward R. Squibbb, M.D., . . . 500
On Wild Cherry Bark. By Joseph L. Lemberger, . . . 503
On Insect Powder. By Samuel S. Garrigues, ... 505
On the so-called African Saffron. By John M. Maisch, . . 506
On Olive Oil and its adulteration. By Henry N. Rittenhouse, . 508
Rennet and Pepsin. By Clemmons Parrish, ... 511
On Extract of Meat. By Albert E. Ebert, ... 512

III. Chemistry.

Note on Litmus Paper. By Edward R. Squibb, M.D., . . 515
An Apparatus for preparing Liquor Ammoniæ. By C. Lewis Diehl, ... 518
Note on the Commercial Bicarbonate of Soda. By E. R Squibb, 524
On Subcarbonate of Iron. By P. W. Bedford, ... 528
Tartar Emetic. By Joseph P. Remington, ... 529
On Citrate of Magnesia. By E. H. Sargent, ... 530
On the amount of Magnesia and Citric Acid contained in commercial solutions of Citrate of Magnesia. By Geo. F. H. Markoe, 532
Glycerin as it exists in Commerce. By Joseph P. Remington, . 539
Note on Chloral. By Edward R. Squibb, M.D., ... 543
On Sulphophenic Acid. By A. B. Prescott, ... 550

List of Societies, &c., receiving complimentary copies of the Proceedings, ... 559
List of Publications received, ... 562
Authorized Agents, ... 564
Constitution and By-Laws, with form of application for membership, 565
Roll of members, ... 574
List of deceased members, ... 591
" resignations, ... 593
" members dropped from the roll, ... 594
Alphabetical Index of Contents, ... 595

PREFATORY NOTICE.

ALTHOUGH more than double the size, the present volume is issued about the same time as last year's. Several weeks elapsed before the reports ordered by the Association to be published were received; from the experience gained in former years, it was deemed best not to go to press before all the manuscript was in the hands of the Editor. From that time the printing went on uninterruptedly, except a delay of a few days, in consequence of an accident, beyond the control of the undersigned. With the arrangements, perfected by an experience of several years, we feel that we can promise to have volumes of the same size as the present one out within about three months, provided all papers and reports are handed to the Executive Committee, in a finished condition, at the time of the Annual Meeting.

The phonographic report was received very early; the extent to which it is published will doubtless be of interest to those members who were prevented from attending the last very interesting meeting.

The large number of original essays in answer to queries and voluntarily contributed, suggested a different arrangement from that heretofore adopted, so as to bring together those relating to the same or to allied subjects, which, we trust, will increase the usefulness of the "Proceedings," and meet with the approval of the members.

The "Proceedings" will be furnished at the following prices for the several issues which *include* the postage:

1851, 1852, 1853, 1855,	unbound,	$0 25	each.		
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1854 and 1856 out of print; none published in 1861.

The entire set of bound volumes, the first four in paper covers, will be furnished at $25; the set of unbound volumes, including the bound ones for 1860, 1862, 1863, are held at $22, the quotations for the entire sets *exclusive of postage or express charges.*

The Twentieth Annual Meeting of the Association will be held at Cleveland, O., on the first Tuesday of September, 1872, at 3 o'clock, P.M.

The attention of Chairmen of Committees and of members contributing papers for the next annual meeting, is respectfully directed to Chapter V, Articles VII, IX, and X, of the By-Laws.

Applications for membership should be addressed *early* to the undersigned; remittance of the dues for the first year is desirable to avoid unnecessary correspondence.

THOMAS S. WIEGAND,
Chairman of the Executive Committee, 528 Arch St., Philadelphia.
JOHN M. MAISCH,
Permanent Secretary, 145 North Tenth St., Philadelphia.

List of Members

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Wm. Wright, Jr., New York.

MINUTES

OF THE

NINETEENTH ANNUAL MEETING.

First Session.—Tuesday, Sept. 12th, 1871.

THE Nineteenth Annual Meeting of the American Pharmaceutical Association convened in the Meeting-room of the Board of Public Schools, at Polytechnic Hall, in the City of St. Louis, Mo., on the 12th day of September, 1871, at 3 o'clock P.M., and was called to order by the Permanent Secretary, John M. Maisch.

THE SECRETARY.—I have to announce to the meeting that the President, as well as the first two Vice-Presidents, are prevented from attending this meeting. The third Vice-President, Mr. Eugene L. Massot, having departed this life during the last year, it devolves upon the Secretary to call the meeting to order. The first business in order is the election of a President *pro tem.*

PROF. MARKOE.—I would name Prof. J. Faris Moore, of Baltimore, as President *pro tem.*

The motion being seconded, and the question taken by the Permanent Secretary, Prof. J. Faris Moore was unanimously elected, and took the chair as President *pro tem.*

PROF. MOORE.—I presume this is the first time in the history of the American Pharmaceutical Association that it has met with the entire absence of its presiding officers. I suppose that circumstances have prevented the presence of the President and two of the Vice-Presidents, and, as has just been announced, death has deprived us of the attendance of the third. It has been your pleasure to appoint me as President *pro tem.*, and I can but return my thanks to you for the honor conferred upon me. It is a matter of congratulation to me and to the Association that, while death

has been among us, and carried off some of our brightest stars during the past year, I am now surrounded by so many of the old and familiar faces, who, with many younger members, are permitted in the providence of God to meet again. It is to be hoped that this meeting may not only cement and make stronger old friendships, but that it may be the occasion of forming new and lasting ones, and that it may result in great and permanent good to the pharmaceutical profession. The first business in order will be the calling of the roll of the members present.

The roll being called by the Secretary, twenty-four members answered to their names.

The President appointed the following Committee to examine Credentials: Theodore Kalb, of St. Louis, Edward P. Nichols, of Newark, N. J., and Thomas Doliber, of Boston, Mass.

The Committee retired for consultation, and the Secretary read the following letter:

EDINBURGH, August 2, 1871.

TO THE PRESIDENT OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

DEAR SIR: I am requested, as President of the British Pharmaceutical Conference, to introduce Mr. Henry B. Brady, F.L.S., &c., &c., as our representative at your approaching Conference, and who is to be my successor to the post I have the honor of filling.

It is the desire of our Association to congratulate your body most heartily upon its past efforts and present success, and to convey the warmest expressions of our sympathy and interest in its future; but he who bears our message is far better able to express this feeling than any written words of my own. I commend him, therefore, to the consideration which I know awaits his arrival on your hospitable shores.

I have the honor to be, dear sir,
Yours, faithfully,
W. WALTER STODDART,
President of the British Pharmaceutical Conference.

THE PRESIDENT.—What will the Association do with these credentials?

PROF. MARKOE.—I move that they be accepted.

Agreed to.

PROF. PARRISH.—When the motion was made to accept the credentials, I was waiting for some further remark as to the action the Association would take in the premises, the case being without precedent. I now venture to make, without having consulted with other members and without much reflection, a motion that Mr. Brady be invited to take a seat as a member of the Association.

Agreed to.

THE PRESIDENT.—I now have the pleasure of introducing Mr. Brady, the delegate from the British Pharmaceutical Conference.

MR. BRADY.—I did not expect, sir, to be called upon so early to express to you the feeling which I am charged to convey from the British Pharmaceutical Conference—the feeling of fraternal sympathy and of greeting to this large and important Association. We hold you—by you I mean this Association—as in some sort the exemplar which we have endeavored to follow in establishing the Conference over which I have now, unworthily, the honor to preside. It was said that the organization which we had in London—the central organization in connection with Pharmacy in England—was sufficient to provide for the wants of the British Pharmaceutists in respect to intercommunication and the like; but it seemed to some of us some eight or nine years ago, that you had in America an organization which would supplement in a very remarkable degree, if applied to England, the efforts of the Pharmaceutical Society of Great Britain towards the advancement of Pharmacy and the amelioriation of the condition of pharmacists. We followed, therefore, this Association as nearly as we could, and with only as much modification as the nature and condition of Pharmacy in England, as compared with that in America, necessitated; we endeavored to form an Association which should as nearly as possible resemble that which you have here. How far that Association has been successful may be gathered not only from the increasing roll of members, but by the amount of, I think I may say without vanity, good work which has proceeded from the association of chemists throughout the country, in England as distinct from the Association in London. It was my happiness that the first meeting, the preliminary meeting of the British Pharmaceutical Conference, should be held in my native town; from that moment to the present I have missed no step in its career. I do not propose at this moment, when time is so valuable to you, at the opening meeting of your Convention, to enlarge at all upon either our present condition or our past history. I have merely intended to show to you how much I feel we are indebted to you, with how much brotherly and fraternal sympathy I can meet you, and to thank you for the very hearty and very kind reception which I have met with, not merely here in St. Louis, but ever since I landed on the American continent. I take the honor you have done to me this day, in making me one of your members, as a compliment rather to the British Pharmaceutical Conference than to myself, for to a certain extent I represent them officially. For them, and on their behalf, I thank you; for myself, it becomes me with simple humility to say, from the bottom of my heart, I feel that you have done me great honor.

The Secretary read letters of invitation from the Board of Managers of the Public School Library and from the Mercantile Library, to visit and make use of these libraries during the meeting of the Association; also from the American Wine Company, 119 Olive Street, to visit their wine-vaults.

On motion, the invitations thus extended were accepted, and the Secretary directed to return the thanks of the Association for these kind invitations.

Mr. Theodore Kalb read the report of the Committee on Credentials, as follows:

To the President and Members of the American Pharmaceutical Association.

The Committee on Credentials respectfully report that they have examined the credentials of the delegates of the following Associations, and find them correct:

Massachusetts College of Pharmacy.—George F. H. Markoe, Joel S. Orne, Charles H. Price, Charles I. Eaton, I. Bartlett Patten.

Alumni Association of the Massachusetts College of Pharmacy.—Charles A. Tufts, Thomas Doliber, George H. Beale, George E. Raymore, J. Howes Dyer.

College of Pharmacy of the City of New York.—P. Wendover Bedford, F. Victor Heydenreich, William Wright, Jr., Edward L. Milhau, Moses L. M. Peixotto.

Alumni Association of the College of Pharmacy of the City of New York.—George C. Close, John Best, Henry C. Porter, John W. Ballard, Hampden Osborne.

New Jersey Pharmaceutical Association.—Edward P. Nichols, M.D., Charles W. Badger, James R. Mercein, Henry A. De Motte, Julius Fehr.

Newark Pharmaceutical Association.—Charles H. Dalrymple, Charles W. Badger, Andrew M. Mills, M.D., William M. Littell, Alexander Havenstein.

Philadelphia College of Pharmacy.—Prof. John M. Maisch, Prof. Edward Parrish, Joseph P. Remington, Prof. William Procter, Jr., Evan T. Ellis.

Alumni Association of the Philadelphia College of Pharmacy.—Prof. Edward Parrish, Albert P. Brown, William H. Raser, Charles F. Jefferson, William McIntyre, Richard M. Shoemaker.

Maryland College of Pharmacy.—Dr. J. Faris Moore, Louis Dohme, John F. Hancock, J. Newport Potts, John A. Webb.

Alumni Association of the Maryland College of Pharmacy.—Dr. J. Faris Moore, John F. Hancock, Louis Dohme, John S. Conrad, Charles R. Beck.

Columbia Pharmaceutical Association of Washington.—Zachariah W. Cromwell, Joseph W. Nairn, Z. D. Gilman, James D. O'Donnell, G. M. Howard.

Louisville College of Pharmacy.—Peter P. Sutton, Thomas E. Jenkins, M.D., C. Lewis Diehl.

St. Louis College of Pharmacy.—Enno Sander, Maurice W. Alexander, Justin Steer, Hubert Primm, Guilford T. Chamberlain.

School of Pharmacy of the University of Michigan.—Dr. A. B. Prescott.

Chicago College of Pharmacy.—Albert E. Ebert, George Buck, Newton Pierpoint, John W. Ehrman, Ezekiel H. Sargent.

Kansas College of Pharmacy.—Edward T. Porter, Joseph Harrop, Robert Parham, George Leis, Robert J. Brown.

Ontario College of Pharmacy.—William Saunders.

Respectfully submitted,

(Signed) THEODORE KALB,
EDWARD P. NICHOLS,
THOMAS DOLIBER.

An objection was raised to the admission of a delegate from the School of Pharmacy of the University of Michigan, and the following discussion took place:

THE SECRETARY.—The committee reports that there is a delegate present from the University of Michigan School of Pharmacy. I should like to know whether the delegate from that school is entitled to a seat as a delegate. He has a right undoubtedly to membership, but whether as a delegate I have my doubts. The clause of the By-laws, referring to it, reads, "All Colleges of Pharmacy, or local pharmaceutical organizations, shall be entitled to five delegates as representatives at the annual meetings." Now it strikes me that the Michigan school is not what our By-laws regard as a college of pharmacy or local pharmaceutical association, and consequently, in my opinion, at least, that delegate cannot be admitted as a delegate, though, under the clause of membership, he is undoubtedly entitled to apply for admission as a member. The By-laws say: "Every pharmacist and druggist, &c., and those teachers of pharmacy, chemistry, and botany, who

may be specially interested in pharmacy and materia medica, are eligible to membership." I should like to have the opinion of some of our members upon the subject.

Mr. Brown.—It is well known that the graduates in pharmacy, of the University of Michigan, are gentlemen who are not required, before graduation, to have any practical experience in the business; the question will arise with this Association whether graduates of that school are really pharmacists or not, and the line will soon have to be drawn whether or not they shall be recognized by this Association. My opinion upon the subject is, that we ought not to recognize them unless they are practical pharmacists, and not merely theoretical ones.

Prof. Markoe.—My view of the subject coincides with that of Mr. Brown, that the Association could not regard as a college of pharmacy, any institution that gives a diploma to its students without exacting practical experience in pharmacy. It is very well known that the diploma of the Michigan School of Pharmacy is not acknowledged by several of the colleges of pharmacy, and that being the case, I do not see how it can in justice be recognized by the Association. I should therefore oppose the admission of the gentleman as a delegate, although I should be glad to vote for him as a member of the Association.

Mr. Dalrymple.—I move that this matter be referred to a committee. I think it would not be well to act too hastily upon it.

Prof. Ebert.—I think this matter should be discussed in an open meeting of the Association. It certainly should be settled what constitutes a college of pharmacy, and it ought not to be settled by a committee. I think we all have a right to participate in such a discussion, and I hope it will be brought squarely and fairly before this Association, and that it will be settled what a college of pharmacy is.

The President.—I would suggest to the Convention that there is no motion before the meeting. Should this special subject be referred to a committee, I presume that when the report of the committee is made, either for or against, the subject will come properly under discussion; that will be, it seems to me, the proper time to consider the question. I hope Mr. Ebert will withdraw his opposition, and let it go before a committee.

Mr. Dalrymple.—That was my understanding in making the motion. I did not wish the Association to act in a hasty manner. I suppose the committee will refer back its action to the Association, and it is then for the Association to decide the matter.

The President.—I understand the motion to be the appointment of a committee to consider the admissibility of the Michigan School of Pharmacy.

Mr. Dalrymple.—My opinion is this question will come up a great many times in the future, and we had better go about it understandingly. This Association is becoming very popular, and it is going to be an object to have the recognition of the Association.

Mr. Sargent.—If this motion is put and carried, can a motion then be

made to adopt the balance of the report of the committee? It seems to me this report must be adopted before we can go on with our business.

THE PRESIDENT.—The report with that exception can be adopted.

MR. SARGENT.—Then I should think the orderly way to proceed would be to move the adoption of the report. It seems to me that is the business in order, and that nothing can precede it.

THE PRESIDENT.—A motion to adopt so much of the report as does not conflict with the motion to refer to a committee, might be put and carried.

MR. SARGENT.—I was doubtful whether or not the thing could be done orderly in that manner. I should suppose the first thing to be done would be the adoption or rejection of that report.

PROF. PARRISH.—I believe we are acting under the By-laws as to the appointment of a committee on credentials and their report. I understand this committee to have reported this list of delegates, including the delegate from the University of Michigan. It is now competent for the Association to settle whether to adopt that report or otherwise. Those who think the delegate from the University of Michigan should not be admitted, should vote against the report of the committee. Then the subject would be open for further remarks and for the reference to a committee, perhaps back to the Committee on Credentials.

MR. DALRYMPLE.—I will withdraw my motion, and would move that the report of this committee be received, with the exception of the report in regard to the Michigan School of Pharmacy.

MR. DOLIBER seconded the motion.

THE PRESIDENT.—The motion before the Association then is that the report be accepted, except so far as it relates to the University of Michigan.

MR. DOLIBER.—Was not the duty of the Committee on Credentials to see who were accredited to the meeting? We found that this delegate from the Michigan University was accredited to the meeting. Is it not the Association's duty to decide whether they will receive that delegate or not?

THE PRESIDENT.—Certainly; the committee could do nothing else than report all the credentials before them.

The motion to accept the report of the Committee on Credentials, except that portion which relates to the delegation from the University of Michigan, was then adopted.

The motion to refer the admissibility of the delegate from the University of Michigan to a committee being before the meeting, Prof. Markoe moved that the committee consist of three, and be appointed by the Chair.

PROF. PARRISH.—If that is to be the case, I think it had better be referred back to the Committee on Credentials.

THE PRESIDENT.—That committee has attended to its duty, and made its report.

PROF. PARRISH.—If a committee is to be appointed to prevent discussion in open meeting, I think it should be a large committee; if it is simply to bring the matter before us for discussion, then I think a small committee might do. I should propose ten.

PROF. MARKOE withdrew his motion for three, in favor of Mr. Parrish's motion that the committee consist of ten.

MR. DALRYMPLE.—If this subject is open for debate, I would like to say a word. I hope a committee of ten will be appointed, because this is a matter of considerable importance, as Mr. Parrish has already said, and I would like to have the committee represent all portions of our country, all the great centres of our art.

MR. BROWN.—I should oppose that committee, on the ground that the By-laws set forth who are admitted as delegates of the Association. It provides for delegates from Associations and Colleges. Now if this delegate comes properly from a College of Pharmacy, he can become a member of the Association; if he does not, then the question will arise, what is the Michigan University? According to the usual way in which we conduct business, it is not properly a College of Pharmacy, and the committee cannot decide upon his admission as a delegate, as this will certainly require a change in the Constitution to include the graduates of the Michigan University.

MR. O'GALLAGHER.—I rise to ask for information. I don't know anything about the Michigan College of Medicine or Pharmacy. I understand a gentleman presents himself as a delegate, and he is not a pharmacist. He graduated at a school of medicine where they teach what is called "practical pharmacy," but which don't amount to much. I want to know if one of these gentlemen can be admitted as a delegate, and also what the College of Michigan is. There is evidently something in the wind that I do not understand, and I want information. If the gentleman is not a pharmacist, I do not see why he is entitled to be here at all; if he is, he is entitled. If he is what is called a graduate of pharmacy from a medical college, that don't make him an apothecary. I am opposed to these large committees. They never amount to much. Five is enough, and I make an amendment to that effect. If five men cannot agree, ten will not. The better way is to decide the question now right here. At any rate, I would like to have some information. There is something about this College of Michigan that I cannot understand, and I want to know what it is.

THE PRESIDENT.—It is a question of doubt whether the Michigan University can be represented here by a delegate under our Constitution and By-laws. The proposition is to appoint a committee of ten to examine that question, and report their opinion upon it to the Association, which can then take action upon it. I see no other way by which we can get at this question, unless some one makes a motion that this delegate be received, or the contrary.

Prof. Procter.—It appears to me the Committee on Credentials should take this matter into consideration, and decide it. It was my opinion at once, on hearing this, that that committee should have decided that question before they brought it in. I don't wish to prevent the appointment of the proposed committee of ten; but really it seems to me that we have a regular Committee on Credentials, and that it is their duty to take this question into consideration, and report upon it.

Prof. Ebert.—That committee was appointed to receive all the credentials that were presented. That committee presents its report. They may not have any doubt about any of the credentials; but if a doubt is brought up before the meeting, it is the duty of the meeting, and the business of every member to express his opinion in open meeting. This appointment of a committee to whom this matter shall be referred, is only delaying the question. We are all as able to decide this matter at this moment as a week hence. What is the use of referring the question to a committee of ten? They will be no better qualified to act upon it than all of us are. Let us decide whether the delegate from the University of Michigan is a suitable representative; whether the University is a College of Pharmacy. If it is not, we reject him; if it is, we admit him. That is the basis we want to act upon. There is no use in a committee. This committee, if appointed, would come together, and occupy a whole evening, when they might be with us amusing themselves, if there is any amusement. Then when we come together to-morrow, when our time will be more valuable than this afternoon, all this discussion will have to be gone over again. Why not settle the question now? Are we not just as qualified to decide it to-day as we shall be to-morrow? I say we are, and I hope we shall decide whether the Michigan School is a College of Pharmacy or not.

Mr. Gordon.—That is what I supposed the committee would do. Determine what this University is, and by that means bring the matter down to a small point.

Mr. O'Gallagher.—I move to amend that a committee of five be appointed.

Prof. Parrish.—The object I had was, if possible, to include the diversity of opinion which must of necessity exist in a Convention representing, as this does, a large number of organizations all over the country, and so many who are not connected with any organization. I think, with the variety of views and sentiments there must be on this question, that we need information; that we need to have the subject discussed out of doors by some of our members, who would take it up and look at it in all its bearings, and present an intelligent report, showing what relation the University has to pharmaceutical education, and how far it is entitled to representation here. I believe it would save an immense deal of time, and be more satisfactory than a discussion in a body like this. There are many difficulties, I know, in settling it. It is a precedent, and there are many views to be taken of it. We might discuss it all the afternoon, and then feel we did not really know how to vote on it. Pharmaceutical education, in this country,

is in its infancy. There are very few schools that teach Pharmacy; there are very few persons who are graduates in Pharmacy. We have heard it said that a graduate of a medical school has no right among us. Let us remember that there are many here who have never even graduated in a medical school or school of pharmacy, and who make no pretensions to it; but we give them the right hand of fellowship, and we want them to be associated with us for their good and our good. We are comprehensive. We are not a college elected after great care and research as to the qualifications of each individual; we take everybody in, and if the delegate from the University of Michigan came here as an individual, there would not be the slightest question about his admission. Now it is a question, looking at the future, at the shape pharmaceutical education is to take hereafter, what sort of bounds we ought to make in this beginning. I think the best way to do is to have a large number representing each of the organizations represented here. I mentioned ten, because I thought there was about ten institutions represented. I think they ought all to meet together, and consider this subject calmly and dispassionately, and present an intelligent report.

The question was put, on the amendment, that the committee consist of five; it was lost. Professor Parrish moved an amendment, which was accepted by the mover of the original resolution, that the question be referred to a committee, consisting of one from the delegates of each organization represented at this meeting. The motion thus amended was carried, and the President appointed the following committee, representing the organizations accredited according to the report on page 28. George F. H. Markoe, Thomas Doliber, P. Wendover Bedford, Hampden Osborne, Edward P. Nichols, Charles H. Dalrymple, William Procter, Jr., Edward Parrish, John F. Hancock, Louis Dohme, Zachariah W. Cromwell, C. Lewis Diehl, Enno Sander, Albert E. Ebert, Robert J. Brown, William Saunders.

Professor A. E. Ebert desired to be excused from serving on this committee, his time being occupied by other work. On motion, the request was granted, and Mr. E. H. Sargent appointed in his place.

Mr. Dalrymple moved, and the motion was carried, that a member from the Association at large be appointed to serve on this committee, when Professor Parrish moved that the President, *pro tem.*, be that member; the question being taken by the Treasurer, it was carried unanimously.

It being stated that Mr. Osborne, delegate from the Alumni Association of the College of Pharmacy of the City of New York, was not present at the meeting, his name was, on motion, dropped, and Mr. John M. Ballard, of the same delegation, appointed to serve in his place.

The Secretary called again the roll, when sixty-seven members and delegates answered to their names.

Mr. William Wright, Jr., acting in behalf of the Executive Committee, presented the names of the following applicants for membership, they having complied with the requirements of the By-laws:

Alabama.

Alexander S. Carrel, Selma.
James L. McVoy, "
Charles Mohr, Mobile.
John D. Wilkins, Selma.

Arkansas.

J. J. McAlmont, M.D., Little Rock.

District of Columbia.

George M. Howard, Washington.
William S. Thompson, "

Connecticut.

Harlow Chapin, New Haven.
Henry Daggett, " "
Samuel C. Morrison, Stamford.

Georgia.

John B. Daniels, Atlanta.
Leonard W. Hunt, "
Frederick E. Mason, "
Frederick S. Peacock, "

Illinois.

Nathan T. Baker. Belleville.

Indiana.

Charles A. Davis, Terre Haute.

Iowa.

William A. Cook, Washington.
George H. Schæfer, Fort Madison.

Kansas.

John B. Marshall, Olathe.

Kentucky.

Edward S. Sutton, Louisville.

Louisiana.

M. E. F. Keaton, New Orleans.

Maine.

William H. Jordan, Portland.
John F. Patten, Bangor.

Massachusetts.

G. K. Arnold, Cambridgeport.
M. S. Bidwell, Sheffield.
William A. Blossom, Boston.
George H. Burnham, "
Linus Dana Drurg, "
Charles I. Hood, Lowell.
Edward Samuel Kelley, Boston.
John Colby Lowd, "
Charles Ellridge Tappan, "
Thomas Wouldhave, Maynard.

Minnesota.

C. Edward Eyster, Duluth.
John Musser Reigart, St. Peter.
Gottlieb Stein, St. Paul.

Missouri.

James W. Allison, St. Charles.
E. F. Baker, Kansas City.
Charles Bang, St. Louis.
Solomon Boehm, "
S. F. Boyce, Chillicothe.
Ephron Catlin, St. Louis.
Theron Catlin, "
Charles O. Curtman, M.D., St. Louis.
Henry Diers, "
Edward R. Fetherston, Trenton, Grundy County.

C. F. Adolph Fischer, St. Louis.
Paul D. French, Kansas City.
James M. Good, St. Louis.
Charles Grandjean, "
Eugene Granjean, "
John Guerdan, "
Adolphus Harless, "
Arthur P. Hollister, "
Martin Kovács, "
Hugo Krebs, "
George T. Lyon, Kansas City.
William L. Maddock, St. Louis.
John F. Metzger, "
A. Orynski, Hannibal.
J. Clifford Richardson, St. Louis.
Philip Scholz, "
Frederick Will. Schulte, "
George Ude, "
L. Edward Witte, "

Nebraska.

Charles F. Goodman, Omaha.

Nevada.

Charles Edgar Baldwin, Aurora.

New Jersey.

P. H. Morris, Englewood.

New York.

T. J. Macmahan, New York.
William H. Tibbs, Buffalo.

Nicaragua.

Horace Guzman, Granada.

Pennsylvania.

Robert Christy, Mansfield, Alleghany County.
Edward Latham, Pottsville.
Stephen F. Penrose, Quakertown.
West Nugent Purdon, Easton.

Texas.

Stewart Kellam, Galveston.

Virginia.

T. A. Howard, Richmond.

The President appointed Messrs. Rice, of New York, and Webb, of Baltimore, tellers, who reported the unanimous election of the candidates.

The reports of committees being next in order, the following were handed in, read by their titles, and laid upon the table for future action:

Report of the Executive Committee, with the report of the Permanent Secretary.

Report of the Committee on the Drug Market.

Report of the Committee on Papers and Queries.

Report of the Committee on Unofficinal Formulas.

Report of the Committee on Adulteration and Sophistication.

Report of the Committee on Legislation.

Report of the Committee on International Pharmaceutical Congress.

Report of Thomas S. Wiegand, Special Committee on Index.

The report of the Committee on the Progress of Pharmacy has not been received, the Secretary stating that Mr. Wenzell, of San Francisco, the chairman, intended to send it in time for

this meeting, and that it might probably arrive before the final adjournment.

The appointment of the Nominating Committee being in order, the delegations of the various Colleges and Associations selected the following from among their number to serve on this committee:

Massachusetts College of Pharmacy,	Prof. G. F. H. Markoe.
Alumni Association of same,	Charles A. Tufts.
College of Pharmacy of the City of New York,	Wm. Wright, Jr.
Alumni Association of same,	John W. Ballard.
New Jersey Pharmaceutical Association,	Dr. E. P. Nichols.
Newark Pharmaceutical Association,	Charles H. Dalrymple.
Philadelphia College of Pharmacy,	Prof. Wm. Procter, Jr.
Alumni Association of same,	Wm. H. Raser.
Maryland College of Pharmacy,	J. Newport Potts.
Alumni Association of same,	John F. Hancock.
Columbia Pharmaceutical Association,	Z. W. Cromwell.
Louisville College of Pharmacy,	C. Lewis Diehl.
St. Louis " "	Maurice W. Alexander.
Chicago " "	Albert E. Ebert.
Kansas " "	Edward T. Porter.
Ontario " "	William Saunders.

The following additional members of the Nominating Committee were appointed by the President from the Association at large: Messrs. Matthew F. Ash, Jackson, Miss., Joseph H. Larwill, Bolivar, Tenn., William J. M. Gordon, Cincinnati, O., Joseph L. Lemberger, Lebanon, Pa., Cyrus Pyle, Brooklyn, N. Y.

The Permanent Secretary read the report of the Executive Committee, to which was appended his annual report to the Chairman of that committee:

The Executive Committee respectfully report, that the Eighteenth Volume of the Proceedings was issued early in February last; its appearance having been delayed by causes beyond the control of either Editor or Executive Committee; this delay it is hoped will not recur.

The volume, although somewhat smaller than that of the previous year, will, it is hoped, be satisfactory to our members, being at least equal in interesting topics, paper, binding, and typography, to that of any previous year.

The entire expense of its publication has been paid by the checks of our Treasurer.

The names of all applicants who have complied with the constitutional provisions are on file, and will be reported at the proper time for election.

The Treasurer has been arduously engaged in his duties, upon the successful accomplishment of which so much of our prosperity depends, and hopes may be entertained that our financial embarrassment will be soon removed. Only twenty-six members are at present known to have resigned, and the increased dues will very readily overcome such loss.

The Executive Committee are yet charged with one duty before closing their report, that of announcing the deaths of those of our fellow-members, so far as they have been informed in regard to them. It is always a sad duty, but when those who have been among the most active in promoting the progress of our calling, and who have been among the most efficient of our officers, are to be reported among death's gatherings, it is still more sad. The names of twelve have been reported to your committee, and where no information respecting the decedents was given, your committee endeavored, but without success, to obtain materials to form such notice as would seem proper.

James W. Backus, of Marine City, Mich., became a member of our Association in 1867, and died September 14, 1870, aged 49 years.

John Calvin Bingham, a native of Goshen, N. H., removed to St. Johnsbury, Vt., when about 21 years of age, where he taught school for a time. Becoming interested in the drug business, and being intelligent, industrious, and reliable, he was respected in the community where he resided. His death took place on the 7th day of December, 1870, and his memory will be long cherished for his consistent Christian demeanor and his active, useful life.

Hippolytus A. Blauw, of Rochester, died August 10, 1870, in the 45th year of his age.

He came to this country in 1849, and was at first employed by Mr. A. J. Matthews, of Buffalo, N. Y. After two years he commenced business in Rochester with Mr. I. H. Haas, and attended to it with great diligence till 1869, when his health failing he sold out. His intimate friends testify to his straightforward, honorable course in all his transactions. He left a wife and seven children.

Ferris Bringhurst, one of our Vice-Presidents last year, died on the 16th of March in his native city, Wilmington, Del., in the 34th year of his age.

His death was the result of an explosion of the retort with which he was preparing oxygen, to illustrate the lecture upon water before the Workingmen's Association, for whom he felt a deep interest.

He was graduated by the Philadelphia College of Pharmacy in 1857, and during the sessions he attended, he placed himself under the instructions of Dr. F. A. Genth for the study of analytical chemistry. His interest in everything calculated to advance the standing of our calling made him an active and useful member of our Association, and had he lived three weeks longer he would have been elected a member of the Philadelphia College

of Pharmacy, under the revised by-law permitting members to be elected from all parts of the United States. With a character so pure, with manners so refined, and with an address so genial, he was a favorite with all who met him, and his loss will be felt deeply by his associates; but by his family the bereavement is felt which no words of ours can express: their only solace can be the thought that he had long cherished those hopes and tempers which are shared in only by those whose death translates them to the bliss of heaven.

Mr. Valentine Harbaugh, of Washington, D. C., died March 20, 1871, in the 56th year of his age. For many years Mr. Harbaugh was President of the Pharmaceutical Association of Washington, and was highly esteemed as a useful and estimable citizen, and his death was quite unexpected till within a few days of his demise.

Samuel D. Hendel, of St. Louis, Mo., died January 22d, 1871, in that city, aged 39 years. A native of Carlisle, Pa., he learned his business with the late Henry C. Blair, and was graduated by the Philadelphia College of Pharmacy in 1852. He removed to St. Louis, Mo., where he became associated with Mr. Leitch, and was well known as a capable and accomplished druggist, and much respected.

Mr. Charles H. Lyon, of Boston.

Mr. George B. Macpherson, of Cincinnati, Ohio, died of typhoid fever at Macon, Georgia.

Mr. Macpherson was well known as an accomplished pharmacist; but no particulars have been furnished your committee.

Eugene L. Massot, of St. Louis, Mo., one of the Vice-Presidents of this Association, died on the 14th of February last.

He was a native of Louisville, Ky , and learned his business in Galena, Ill. In 1852 he removed to St. Louis, and there, by the practice of those principles of integrity and correctness for which he was distinguished, he established a large and valuable trade. The establishment of the St. Louis College of Pharmacy was mainly secured by his efforts, and so much was he esteemed by his confrères, that a special meeting of the College was held to make some proper expression of their feelings.

Daniel Roemer, of Cincinnati, Ohio, died in September, 1870.

William Taylor died on the 30th of January, 1871, in the City of Philadelphia. He studied his business under Edward Parrish, and had established a flourishing trade. He took an active interest in politics, and was elected Coroner of the County of Philadelphia for two terms. He became a member of our Association in 1868.

William Warren, of Brighton, Mass.

In concluding this report the Chairman would express his thanks to the Permanent Secretary, Treasurer, and all those members whose courtesy and

attention have made all the duties pertaining to his position so light and pleasant.

Respectfully,

THOMAS S. WIEGAND,
Chairman.

REPORT OF THE PERMANENT SECRETARY.

TO THE CHAIRMAN OF THE EXECUTIVE COMMITTEE:

The Proceedings at our Eighteenth Annual Meeting, held in Baltimore last year, were published and distributed after considerable delay, the causes of which were explained in the preface of the last volume. The Secretary expresses the hope that the business arrangements adopted at our last meeting will be perfected to such a degree as to remove all similar causes of delay.

Thirty-six members had to be dropped last year for the usual neglects, and five resignations were received, while, on the other hand, the names of several members were restored on the roll.

The stock of Proceedings stored at the Philadelphia College of Pharmacy, exclusive of the copies at this meeting, is as follows:

1851, . . .	364	in paper covers.			
1852, . . .	124	"	"		
1853, . . .	123	"	"		
1854, . . .	—		out of print.		
1855, . . .	136	"	"		
1856, . . .	—		out of print.		
1857, . . .	243	"	"	26 bound.	
1858, . . .	78	"	"	13 "	152 loose.
1859, . . .	—			56 "	
1860, . . .	—			230 "	
1862, . . .	—			301 "	
1863, . . .	—			285 "	
1864, . . .	192	"	"	100 "	
1865, . . .	160	"	"	43 "	
1866, . . .	77	"	"	86 "	
1867, . . .	158	"	"	105 "	
1868, . . .	67	"	"	156 "	
1869, . . .	110	"	"	159 "	
1870, . . .	121	"	"	75 "	

The insurance on this stock remains the same as last year.

One or two foreign journals have been received last year, as regular exchanges, in addition to those published heretofore. In compliance with a resolution passed at the Fifth Session of the Baltimore meeting, the Secretary, under instructions from the Executive Committee, ordered such pharmaceutical and other scientific journals published in Europe, which will be of use to the Chairman of the Committee on the Progress of Pharmacy, in the compilation of his report. The expenses attending the procuring of

these journals amounted to $45.19, and it is proposed to add other journals to them, which may be thought necessary or useful, particularly journals from France, where last year the publication of scientific periodicals was interrupted by the war then in progress.

The Permanent Secretary takes this opportunity to again point to the propriety of cutting off the Proceedings, annually sent out gratuitously, from such recipients in whose hands they appear to be of no use whatever, either for the Association, our profession, or to the public.

The incidental expenses of the Permanent Secretary, during the past year, have been as follows:

Postage Stamps,	$64 99
Freight and Express Charges,	66 00
Packing Boxes,	9 12
Packing Paper, Twine, Nails, &c.,	2 63
Telegrams,	1 44
Insurance,	15 00
Order-Book, Address Blanks, &c.,	9 50
Total,	$168 68

This amount does not include the sum of $46.53, for postage, freight, &c., which, owing to severe indisposition of your Secretary, could not be accounted for in time for this meeting.

The Secretary here desires to call your attention to the circumstances connected with an action of the Association, at the Eighteenth Annual Meeting, in regard to the disposition made of a paper, written by Mr. George S. Dickey, then of San Francisco, Cal. In a letter, dated September 1st, 1870, received by me on the eve of starting for the meeting, Mr. Dickey wrote as follows:

"I wanted to be in Baltimore by this time, but could not, and wishing, if I did go, to aid a little in the Proceedings, I pencilled a lot of notes on the United States Pharmacopœia, well aware that, even if any were of value, they were too late for their use; still some might be used in future. During the last few days I have hurriedly written these out, and do not know any better thing than to send them to you to use. How much of these is original, how much recollection, I would not dare to assume, original being about as dangerous an assumption as one can make. If you look at them, you will find they are such notes and ideas as strike one in the prosecution of a retail pharmacy and minor manufactory, in contradistinction to those natural to a professional."

It will be seen that by this letter Mr. Dickey did not give any direct authority to the Secretary to present his *notes* to the Association; but under the pressure of business, it had been hastily construed as conferring such authority. On perusing the notes, they were found to contain many valuable suggestions of practical importance, and the Secretary handed them, therefore, over to the Chairman of the Committee on Papers and Queries, to present them, if deemed of sufficient value; which being done, the Asso-

ciation directed the return of the paper to its author. While it is painful to your Secretary to have been the cause of placing a member in an erroneous position before the Association, it is but just to Mr. Dickey that this statement should be placed on record.

All of which is respectfully submitted.

JOHN M. MAISCH,
Permanent Secretary.

The report was on motion accepted.

PROF. PARRISH.—I regretted, as the report was being read, that, from the matters of business now before us, the Association were not entirely apprised of some of the points contained in it. My own mind was specially impressed with the loss the Association sustained during the past year by death. Of the twelve reported I have felt specially attached to three, and I think it fitting that some other and further expression should be made of the sense of the Association in regard to the loss of some of our deceased members. Eugene L. Massot was one of the very first and most efficient of the pharmacists in the Western, that is, what is considered in the East as the Western country, to take an interest in this Association, and he was, in St. Louis, the pioneer of pharmacy, and the one member who indefatigably looked after its interests and attended most of its meetings, travelling far over the country to the various locations where they were held. He was a man of excellent principles; uncommonly strict in his views of honesty and integrity; and his death is a serious loss to our Association. He was elected, as you are all aware, Vice-President at the last meeting, and had held that office before. I am sure, from the expression I have always heard from those who knew him best, who lived with him here in St. Louis, that he was without exception a highly estimable man. Another of those gentlemen who have departed during the past year, was a young man who was associated with me in his early beginning as a pharmacist, William Taylor. Although he never was much distinguished as a pharmacist, or as specially skilful or interested in the progress of pharmacy, he was a reputable representative of our class. As we have heard, he was Coroner of the city of Philadelphia (which is an office of great responsibility) for two terms. But, of those who have departed, the most to be regretted, to my mind, is that young and excellent man Ferris Bringhurst. He was one of our younger, but one of our most intelligent and scientific pharmacists, and the mode of his death adds peculiar interest to it. He became very much interested, in his native town of Wilmington, Delaware, in the education of the masses—the working people—and he engaged to lecture for them at intervals without compensation. It was in the preparation of one of these lectures—a lecture upon water—that he was preparing oxygen in an iron retort which he had never before used, and which, from some unknown cause, still a profound mystery, exploded, a portion of it being lodged in his brain immediately over one of his eyes, from which cause he died a few days after, having been unconscious from the moment of the shock. This has impressed me with what has often occurred to me, and what I think we too little reflect upon,—the danger of our business. It is not that we often have

to make oxygen, or subject ourselves to the danger of explosion from any cause, but because we are always handling substances which are so dangerous to handle, and so liable by the least accident or lapse of our own mind, or, through the ignorance or carelessness of our employees, to lead to loss of life. I thought these remarks due to the memory of those of our members with whom I felt most especially acquainted, and I should be glad if those knowing the others well, would tell us something about them.

DR. O'GALLAGHER.—As an old friend of Mr. Massot, in business with him for a long time in the city of St. Louis, not as a partner, but as an intimate friend, I coincide perfectly with what Mr. Parrish has said. He was an honest, upright, truthful man, and when I say that I say all that can be said. He was a man in whom we had confidence; he worked hard for the College of Pharmacy and for the American Pharmaceutical Association. If none of the friends of Massot have thought fit to rise and say anything in his favor, it is because we thought we had said before all that was necessary; but I have no doubt I speak for all my fellow apothecaries in St. Louis, when I say that we all coincide in what Mr. Parrish has said.

Mr. William Wright, Jr., reported from the Executive Committee the applications for membership by the following gentlemen:

J. W. Beidelman, Little Rock, Ark.	Jules L. A. Creuse, Brooklyn, N. Y.
Amos Field, Macon, Mo.	F. Alfred Reichard, New York, N. Y.
N. Dana Whipple, Portsmouth, N. H.	Lewis P. Ohliger, Wooster, Ohio.
Abraham Van Winkle, Newark, N. J.	Edwin J. Carson, Memphis, Tenn.
	Theodore Hoerner, " "

A ballot being ordered, Messrs. Rice and Webb were appointed tellers, and reported the unanimous election of the candidates.

With the view of carrying out the new provision of the By-laws, taking effect for the first time at this meeting, that the second session shall close with a visit to the Exhibition Room, it was proposed and adopted, that a committee on specimens be appointed by the Chair at this session. The President appointed on this duty Messrs. C. Lewis Diehl, Louisville, Ky.; George W. Kennedy, Pottsville, Pa.; and John F. Hancock, Baltimore, Md.

The Permanent Secretary read the Annual Address of the retiring President, as follows:

TO THE AMERICAN PHARMACEUTICAL ASSOCIATION.

GENTLEMEN: In retiring from the high position in which you have placed me, I can only regret my inability to contribute to the advancement of our profession in a greater degree than my record will show I have done,

but would commend the rule to members of the Association, each to contribute his mite to the general stock of pharmaceutical knowledge, however insignificant it may appear to himself.

In reviewing the condition and prospects of our Association, we have much cause for congratulation and encouragement. It may be profitable in this connection to take a retrospective view of its progress as indicated by published copies of the Proceedings.

From its origin in 1852 to the fourth meeting, inclusive, in September, 1855, there is no evidence of increased interest amongst the members of our profession in regard to it; each year yielding about 40 pages. The fifth meeting, held in Baltimore, September, 1856, gives evidence of growing interest, in requiring 89 pages to record its labors. From this time the fruit increased abundantly. The sixth meeting, in Philadelphia, September, 1857, required 178 pages; the seventh, in Washington, September, 1858, 488 pages; the eighth, in Boston, September, 1859, 416 pages; after which time all other interests were swallowed up in the all-absorbing one of civil war. Pharmacy suffered from the blight with other interests, and in consequence yielded less fruit. The labors of the ninth meeting, held in New York, September, 1860, were recorded in 278 pages. The next year, 1861, our tree yielded no fruit. The tenth, held in Philadelphia, September, 1862, 321 pages; and from this time forward the interests of the Association revived, as shown by the successively increasing yield. The eleventh meeting, held in Baltimore, September, 1863, 321 pages; twelfth, in Cincinnati, September, 1864, 355 pages; thirteenth, held in Boston, September, 1865, occurring just after the end of the war, yielded 260 pages; fourteenth, in Detroit, August, 1866, 316 pages; fifteenth, in New York, September, 1867, 453 pages; sixteenth, in Philadelphia, September, 1868, 506 pages; seventeenth, in Chicago, September, 1869, 468 pages; eighteenth, in Baltimore, September, 1870, 352 pages.

By this general view we have a rough way of judging of the interest taken by our profession in the objects which it is the endeavor of this Association to promote.

May we not predict a still further growth of interest and more abundant fruit from the present one, the first meeting west of the Mississippi, in the great central mart of our now extended country?

Our financial condition I think will be found more as we could wish it to be, owing to the action of the Association at its last meeting in increasing admission fees and annual contributions by the members, to meet our current expenses without the necessity of anticipating the resources of the Association. The Treasurer has, I believe, been able to pay all the liabilities accruing the present year. The increased dues have been, with few exceptions, cheerfully paid, and we have reason for hoping that another year will see us out of all difficulties in regard to pecuniary affairs. The appointment of authorized agents, agreeably to a resolution passed at the last meeting, has facilitated the labors of the Treasurer and Permanent Secretary. Since the extension of such appointments to other cities is left to the discretion of the proper officers, there is perhaps no need of further action on this subject at present.

So much change was made in the financial department last year, that I will avoid further recommendations of alterations until we are enabled by longer experience of its working to judge what, if any, are necessary. The Executive Committee have exhibited their usual diligence in furnishing another volume, stored with information valuable and profitable to the pharmacist, at the usual time, notwithstanding unavoidable delays in receipt of the phonographer's report and reports of committees. They have re-engaged our able reporter, Mr. James H. Slade, who will probably be able to forward the phonographic report more promptly, and enable the committee to furnish the forthcoming volume to the members in December. The Editor and the Executive Committee are not disposed to delay the publication on account of unfinished papers, and it is suggested that the Association do not grant time to an author to finish his paper after the adjournment, except, perhaps, to the Committee on Specimens.

The exhibition of specimens this year promises to be an extensive one. The Association will for the first time pay an official visit to the exhibition room; on which account it may be desirable to appoint the Committee on Specimens at the first or beginning of the second session, in order to give them time to examine the articles, and be able to point out the most interesting ones to the members; or else select some one to attend to that duty. New articles, particularly new drugs, might with propriety be introduced to the special notice of the Association at a subsequent session.

The Chairman of the Committee on Papers and Queries has frequently notified those members who have accepted queries, during the year, which it is hoped will bring out many replies, increasing our stock of knowledge by many valuable additions.

The subject of pharmaceutical legislation has occupied the attention of the executive bodies of several States. New York was burdened with a bad law. In one State the subject is still pending.

The committee to whom was referred the duty of investigating the practicability of inviting the International Pharmaceutical Congress to meet in this country in 1876, will probably report at this meeting. Should they report favorably, and the Association agree to the proposition, it would be proper to send a delegate to the next Congress, to meet in St. Petersburg, Russia, in 1872. Unless some one, considered to be fully worthy to represent the Association on such an occasion, should visit Russia next year, it may be necessary to select some one, and send him. Whether or not the Association can afford this expense is a matter of grave consideration. The opinion of the Treasurer might, perhaps, determine the action of the Association.

I think it would be desirable, and would recommend, that the Association empower the President, by and with the advice of the Treasurer and Executive Committee, to remit the dues to such members who, being worthy, are nevertheless in reduced circumstances.

The Committee on Drug Market will be prepared with a full report on the course of the market during the year, noting the changes in quotations and causes of variations in values as far as practicable; also the amount of importations into the country.

The Committee on Adulteration and Sophistication have been alive to the subject, and in regard to it I can fully indorse the opinion of that committee through its Chairman:

"That the adulterators are not so bad as the parties who force them to do it, by compelling them to take less than the market price for their goods, and 'as every man must live,' they must depreciate the quality of their goods in order to make a living. Popular feeling seems to be moving in the matter, and it certainly is now the duty of pharmacists to move also, and see that proper laws are made."

It is a comfort to know, however, that good drugs are to be found, and if pharmacists were better able to tell the good from the bad, and after they knew to use their knowledge, it would be better for the public at large and quite as well for themselves.

Since our last meeting the Association has to mourn the loss of some of its members by death. I would mention those I know of: Mr. Eugene L. Massot and Samuel D. Hendel, both prominent pharmaceutists of the city of St. Louis, and Ferris Bringhurst, of Wilmington, Del., who fell a victim to his devotion to science.

In conclusion, while expressing my regrets at my inability to be present with you in St. Louis, I cannot omit to express my high appreciation of your confidence and trust, and my best wishes for the long-continued success and usefulness of the Association.

R. H. STABLER, M.D.

ALEXANDRIA, VA., September, 1871.

On motion of Prof. Parrish, the address was referred to the Business Committee, to report on the several recommendations it contains.

On motion, the Association then adjourned to meet again to-morrow morning at 9 o'clock.

Second Session.— Wednesday Morning, Sept. 13th.

The second session was called to order by President Moore. The minutes of the first session were read and approved.

Dr. Nichols, of the Committee on Credentials, reported that the committee had received and examined the credentials from the Mississippi State Pharmaceutical Association, accrediting Messrs. W. Pryor Creecy, of Vicksburg, and Matthew F. Ash, of Jackson, delegates to this meeting.

THE PRESIDENT.—There are represented in this meeting seven new societies: the Alumni Association of the College of New York, the Alumni Association of the Maryland College, the Columbia Pharmaceutical Association, the Louisville College of Pharmacy, the Kansas College of Pharmacy, the Ontario College of Pharmacy, and the Mississippi State Pharmaceutical Association. As is customary, in the name of the American Pharmaceu-

tical Association, I extend a cordial welcome to the organizations represented here for the first time, and express the hope that their association with us may be of mutual benefit to the American Pharmaceutical Association, and to the cause of pharmacy in the locations from which they come.

The committee appointed at the first session, relative to the objections raised against the admission of the delegate from the University of Michigan, presented the following report:

St. Louis, September 13th, 1871.

To the American Pharmaceutical Association:

The Committee appointed at the session of the 12th inst. to consider the admissibility of the Delegate from the School of Pharmacy of the University of Michigan, have duly considered the subject, and respectfully submit the following report:

The Committee on the Credentials of the Delegate from the University of Michigan, having considered the subject in its various relations, are united in the conclusion that the University is not, within the proper meaning of our Constitution and By-laws, a College of Pharmacy: it being neither an organization controlled by pharmacists, nor an institution of learning which, by its rules and requirements, insures to its graduates the proper practical training, to place them on a par with the graduates of the several colleges of pharmacy represented in this Association. We therefore recommend that the credentials of the delegate from the University of Michigan, be returned to him with a copy of this report.

George F. H. Markoe,
Massachusetts College of Pharmacy.
Thomas Doliber,
Alumni Association of the Massachusetts College of Pharmacy.
P. W. Bedford,
College of Pharmacy of the City of New York.
John W. Ballard,
Alumni Association of the New York College of Pharmacy.
E. P. Nichols,
New Jersey Pharmaceutical Association.
Charles H. Dalrymple,
Newark Pharmaceutical Association.
William Procter, Jr.,
Philadelphia College of Pharmacy.
Edward Parrish,
Alumni Association of the Philadelphia College of Pharmacy.
J. F. Hancock,
Alumni Association of the Maryland College of Pharmacy.
Louis Dohme,
Maryland College of Pharmacy.
C. Lewis Diehl,
Louisville College of Pharmacy.
Enno Sander,
St. Louis College of Pharmacy.
E. H. Sargent,
Chicago College of Pharmacy.
R. J. Brown,
Kansas College of Pharmacy.
William Saunders,
Ontario College of Pharmacy.
J. Faris Moore.

It was moved and seconded that the report be accepted and adopted as read; the motion was carried without a dissenting vote.

The Treasurer's report being next in order, Mr. Charles A. Tufts read this document, as follows:

To the Officers and Members of the American Pharmaceutical Association:

In conformity with the requirements of the Constitution, I herewith present a report of the transactions of this office for the past year. All the bills coming to my knowledge have been paid, and there is a balance in the treasury of $1209.87.

In 1869 our Proceedings cost $1724.47; our expenses were $1065.46; the total expenses were $2789.93. In 1870 our Proceedings cost $1623.55; our expenses were $1343.91; the total expenses were $2967.46. This year our Proceedings cost $1175.00; our expenses were $1472.39; the total expenses were $2647.39. The volume of Proceedings is not as large as that of the previous year, and therefore cost proportionately less.

The financial reforms inaugurated last year will not fully take effect till the coming year. I have no doubt they will prove greatly to our advantage, and will place the Association in the position it has been so long striving to attain. Some of the members complain of the advance in dues, and others have tendered their resignations. The perusal of our Proceedings for the past years, not more than the last three, must convince every candid member that no other course remained for the Association but to advance its dues or close its existence. It is to be hoped that all members who love our profession and who desire its advancement, will not only continue their membership, but use their influence to extend its advantages.

At our last meeting I reported there were still fifty-two members from whom I had been unable to obtain answers in relation to their life membership. I have endeavored to close the list before this meeting, but in vain; thirty-four members have withheld their answers, although I have repeatedly requested them to forward the same. It would seem as if in two years those members might have decided either affirmatively or negatively, and with no reflection of such decision being a *hasty* conclusion. It will be the duty of the Treasurer to correspond with these gentlemen until answers are obtained.

We have a long list of members who are liable to be dropped from the roll for non-payment of dues, and unless payment is made previously to the publication of our Proceedings, the officers of the Association must proceed with them according to the Constitution. Complaint has been made that the Proceedings were not received; every member who has paid his dues, will receive the volume, unless by failure of the express or mail. Should any member fail to receive his volume, after seeking diligently and in vain for his receipted bill, the Treasurer will be much pleased to assist him in finding both the bill and the volume.

Members will confer a favor on the Treasurer by notifying him of all changes of residence, either of city, town, or street. We are losing members every year from this cause: they fail to receive their bills or Proceedings, and after two years lose their membership.

I am happy to close this report, as I have in preceding years, with an acknowledgment of my indebtedness to the kind assistance of those members, who have acted as agents of our Association, in the discharge of my duty during the year.

CHARLES A. TUFTS,
Treasurer.

Statement of the Receipts and Disbursements of the American Pharmaceutical Association for the year ending September 12th, 1871.

RECEIPTS.

1870.		
Sept.	To balance on hand, ...	$430 59
1871.		
Sept. 12th.	To amount received for Contributions, . . .	3081 50
	" " " from sale of Certificates, . .	210 50
	" " " " " Proceedings, . .	134 67
		$3857 26

DISBURSEMENTS.

1870.			
Sept. 13.	No. 1.	Telegram to England, Expenses, . . .	$10 91
" "	" 2.	James H. Slade, Phonographic Report, . .	50 00
Dec. 6.	" 3.	" " " " . .	125 00
" 31.	" 4.	John M. Maisch, Expenses, ...	23 06
" "	" 5.	Schaefer & Koradi, Expenses, ...	12 00
1871.			
Mar. 31.	" 6.	John M. Maisch, Expenses, ...	162 92
April 8.	" 7.	Thomas S. Wiegand, Chairman Ex. Com., .	400 00
" "	" 8.	Charles A. Tufts, Expenses, ...	53 27
June 6.	" 9.	Thomas S. Wiegand, Chairman Ex. Com., .	200 00
" 20.	" 10.	" " " " .	200 00
" 24.	" 11.	H. H. Goodwin, Printing, ...	14 25
" 30.	" 12.	Thomas S. Wiegand, Chairman Ex. Com., .	200 00
July 11.	" 13.	" " " " .	100 00
" 15.	" 14.	Schaefer & Koradi, Expenses, ...	59 69
" 26.	" 15.	American Bank Note Co., Certificates, . .	61 25
Aug. 1.	" 16.	Thomas S. Wiegand Chairman Ex. Com., .	75 00
" 25.	" 17.	Charles A. Tufts, Expenses, ...	26 76
" "	" 18.	" " Postage, ...	73 28
" "	" 19.	John M. Maisch, Expenses, ...	500 00
" "	" 20.	Charles A. Tufts, Expenses, ...	300 00
			$2647 39
Sept. 7.	By balance cash on hand to date, ...		1209 87
			$3857 26

E.E. All of which is respectfully submitted.

CHARLES A. TUFTS,
Treasurer.

The report was on motion accepted and referred to an Auditing Committee, to which duty the President appointed the following members: Louis Dohme, Baltimore; Joel S. Orne, Cambridgeport, Massachusetts; and Robert Parham, Leavenworth, Kansas.

Mr. Matthew F. Ash, Chairman of the Committee on Nominations, presented the following report:

The Committee to Nominate Officers for the ensuing year report the following names to the Association:

For President.

ENNO SANDER, ...	St. Louis, Mo.

For Vice-Presidents.

1st. C. LEWIS DIEHL, ...	Louisville, Ky.
2d. GEORGE F. H. MARKOE, . .	Boston, Mass.
3d. MATTHEW F. ASH, ...	Jackson, Miss.

Treasurer.

CHARLES A. TUFTS, ...	Dover, N. H.

Permanent Secretary.

JOHN M. MAISCH, ...	Philadelphia, Pa.

Executive Committee.

THOMAS S. WIEGAND, Chairman, . .	Philadelphia, Pa.
WILLIAM H. CRAWFORD, . . .	St. Louis, Mo.
CHARLES L. JEFFERSON, . . .	Philadelphia, Pa.
CHARLES H. DALRYMPLE, . . .	Morristown, N. J.
JOHN M. MAISCH, *Perm. Sec., ex-officio*, .	Philadelphia, Pa.

Committee on Progress of Pharmacy.

THOMAS E. JENKINS, Chairman, . .	Louisville, Ky.
HENRY W. SCHEFFER, ...	St. Louis, Mo.
JOSEPH L. LEMBERGER, ...	Lebanon, Pa.
JAMES R. MERCEIN, ...	Jersey City, N. J.

Local Secretary, ex-officio.

Committee on Drug Market.

JOHN MCKESSON, JR., Chairman,	New York.
C. F. G. MEYER,	St. Louis, Mo.
RICHARD M. SHOEMAKER,	Philadelphia, Pa.
JOHN JACOB THOMSEN,	Baltimore, Md.
GEORGE W. SLOANE,	Indianapolis, Ind.

Committee on Scientific Queries.

THOMAS DOLIBER, Chairman,	Boston, Mass.
WILLIAM PROCTER, JR.,	Philadelphia, Pa.
JAMES W. MILL,	Chicago, Ill.

Business Committee.

E. H. SARGENT, Chairman,	Chicago, Ill.
JAMES T. SHINN,	Philadelphia, Pa.
THEODORE KALB,	St. Louis, Mo.

Committee on Unofficinal Formulas.

EDWARD L. MILHAU,	New York.

Committee on Adulteration and Sophistication.

JOSEPH P. REMINGTON, Chairman,	Philadelphia, Pa.
EDWARD MALLINCKRODT,	St. Louis, Mo.
CHARLES B. SMITH,	Newark, N. J.

Signed on behalf of the committee,

M. F. ASH,
Chairman.

On motion, the Association proceeded to ballot for President.

Messrs. Richard M. Shoemaker, of Philadelphia, and J. Newport Potts, of Baltimore, were appointed tellers, and after collecting and counting the ballots, reported the unanimous election of Mr. Enno Sander as President of the Association for the ensuing year.

The President appointed Messrs. E. H. Sargent, of Chicago, and W. J. M. Gordon, of Cincinnati, a committee to notify Mr. Sander of his election, and conduct him to the chair.

Before the Association proceeded to ballot for the remaining officers, Mr. Remington desired to be excused from acting as Chairman of the Committee on Adulteration and Sophistication, and said:

I don't think it good policy to put a member from the same city for two successive years as chairman on that committee. One member has to do the work, or the greater part of it, and it would be better, it seems to me, to take a man from New York or another city, so he can work up his section of the country. The committee last year consisted of one member from San Francisco, one from Chicago, and one from Philadelphia, in order to represent the different parts of the country, and that is the reason for appointing members from the different sections, to get a large report. Now, I think, for the same reason, that the Chairman of that committee should annually be taken from a different city. On that ground I hope the Association will excuse me from serving.

On motion, Mr. Remington was excused from acting as Chairman. He was, however, with his consent, retained a member of the committee, and Mr. E. Mallinckrodt nominated Chairman.

Mr. McKesson likewise desired to be excused from serving as Chairman of the Committee on Drug Market. The motion, however, was opposed on the ground that the gentleman had furnished a report, after the Association had failed for two years to receive one. Mr. McKesson was therefore requested to act in the same capacity for another year.

The Association proceeding to ballot, the tellers reported the unanimous election of the nominees as officers for the ensuing year.

Mr. Charles H. Dalrymple reported from the Executive Committee the applications for membership of five gentlemen, they having complied with the requirements of the By-laws, viz.:

Herman Schroeder, Quincy, Ill.	W. R. Bennett, New Lebanon, N. Y.
Albert B. Prescott, Ann Arbor, Mich.	Edward R. Cary, Zanesville, O.
Alois Blank, St. Louis, Mo.	

Messrs. Louis Dohme, of Maryland, and Jos. L. Lemberger, of Pennsylvania, were appointed tellers, and reported the unanimous election of the candidates.

THE SECRETARY.—I desire to call your attention to the report of Mr. Wiegand on the Index. When the index of the first eight volumes was made by Mr. Wiegand, it was referred to a committee to examine and report on. The present index is much more voluminous, and perhaps the same course had better be adopted, to see whether and how it ought to be published. I would move that a committee of two be appointed to examine the index of the last ten volumes, as reported by Thomas S. Wiegand.

The motion was agreed to, and Messrs. William Procter, Jr., and Thomas Doliber, appointed the Committee to examine and report on the Decennial Index prepared by Mr. Wiegand.

The President introduced the first Vice-President as follows:

In the absence of the President elect I will introduce to the Association Mr. C. Lewis Diehl, the newly elected first Vice-President, who will take the chair and preside until the President arrives.

Mr. Diehl presiding, reports of Standing Committees were called up, and Mr. John McKesson, Jr., read numerous extracts from his report on the Drug Market. The report was, on motion, accepted, and referred to the Executive Committee.

The President elect having arrived, was conducted to the Chair by the committee, and introduced to the Association by Mr. Gordon. Before taking the chair, Mr. Enno Sander spoke as follows:

GENTLEMEN OF THE ASSOCIATION: Permit me to thank you for the honor you have conferred upon me undeservedly. I must acknowledge, that although I have been a member of the Association for thirteen years, I do not remember that I have done anything to further its interests, except that I was a member. Knowing this, I really feel almost depressed under the influence of the moment. I may say that I know very well that I am not so much honored by it personally as is the city of St. Louis, where you convene. You have elected me as a member of the Association from St. Louis; from St. Louis, the city that is mourning over the death of a friend of ours, a member of the Association, who would with much more grace, and with much more discernment, fill the chair. I allude to our lamented friend, Mr. Eugene L. Massot. I am sure that he has taken more interest in the welfare of the Association, and in the elevation of pharmacy in this city, than any other member of the Association has done. I am also confident that if he had survived this day, that you would have elected him President; that you would have conferred the honor upon him which he really deserved. Gentlemen, I shall try my best to perform the duties of the position to which you have elected me. I trust you will be satisfied with my efforts.

Professor Ebert read the report of the Committee on Papers and Queries, which, on motion, was accepted, and referred for publication.

The Committee on Queries report the following list for the ensuing year, with the names of those who have accepted them for examination.

Respectfully submitted,

ALBERT E. EBERT,
Chairman.

1. What is the best process of assay by which the medicinal value of Aconite Root can be determined?

Accepted by L. M. Rice, of New York City.

2. Can Aloin be prepared by any process which is uniform in its results?

Accepted by Prof. Albert B. Prescott, of Ann Arbor, Mich.

3. How can the Gum Resins, like those of assafœtida and ammoniac, be prepared and kept in stock, so as to render the use of a mortar unnecessary in dispensing them in mixtures?

Accepted by James McBride, of St. Louis, Mo.

4. An essay with practical working formulas for the more popular artificial Mineral Waters.

Referred to Aug. Theod. Moith, of Fishkill, on the Hudson, N. Y.

5. What is the true value, as a vesicant, of the so-called Cantharidate of Potassa? Is it capable of affording a more eligible application than the Ceratum Cantharidis?

Accepted by Charles J. Kadish, of Chicago, Ill.

6. An essay on Neatsfoot Oil, its sources, mode of preparation, characteristics, and adulterations.

Accepted by J. C. Borcherdt, of Chicago, Ill.

7. Do Pumpkin Seeds owe their medicinal properties to a fixed oil, or to another active principle?

Accepted by Charles L. Jefferson, of Philadelphia, Pa.

8. What is the best process for preparing pills of Phosphorus, and protecting them from oxidation?

Accepted by Thomas S. Wiegand, of Philadelphia, Pa.

9. The berries and root of Phytolacca Decandra possess value as a remedy in rheumatism. To what principle can this property be attributed?

Accepted by Charles F. Fredigke, of Chicago, Ill.

10. What attention has been given to the collection of Argol in the vine districts of California? Is it obtainable in sufficient quantities to be remunerative?

Referred to James G. Steele, of San Francisco, Cal.

11. What is the best test process to determine the medicinal value of Rhubarb Root?

Accepted by C. B. R. Hazeltine, of Boston, Mass.

12. Has any attention been given to the preparation of Milk Sugar (Lactin) in the cheese districts of the United States? Can the production be made remunerative?

Accepted by Joseph L. Lemberger, of Lebanon, Pa.

13. What is the best method of avoiding the pectinous principle from Senega in the process for the syrups of that drug.

Accepted by Reinhold Rother, of Chicago, Ill.

14. Is there an eligible process for making a concentrated pulverulent preparation of Senna, fairly representing its active properties and embracing the Cathartic Acid of Dragendorff and Kubly? And will the association of an alkaline salt modify its griping qualities as a purgative?

Accepted by Clemmons Parrish, Philadelphia, Pa.

15. What is the best test of purity for Oleum Erigerontis Canadensis, and what oils are used to adulterate it?

Accepted by E. J. Weeks, Jackson, Mich.

16. What chemical and pharmacal preparations usually furnished by the wholesale manufacturer can be economically and conveniently prepared by the pharmacist?

Accepted by Charles F. Fredigke, Chicago, Ill.

17. What is the comparative quality of the different brands of Extract of Liquorice of the market?

Accepted by F. X. Crawley, St. Louis, Mo.

18. Effervescent Granular Salts are coming largely into use. Are they generally what their labels represent them to be? What manipulation is necessary to secure the best results, and what are the best proportions of the ingredients?

Accepted by Justin Steer, St. Louis, Mo.

19. Which of the several hand drug-mills is best adapted to the wants of the pharmacist?

Accepted by Thomas J. Covell, Jersey City, N. J.

20. What are the physical properties of Nitrous Ether? What conditions favor and what prevent its decomposition? What are the best means of ascertaining the proportion of Nitrous Ether in the Spirit of Nitrous Ether?

Accepted by N. Gray Bartlett, Chicago, Ill.

21. What is the source and what is the character of the so-called Burgundy Pitch of the American market?

Accepted by John Guerdan, St. Louis, Mo.

22. To what principle or principles does Cimicifuga Racemosa owe its medicinal properties? Can they be isolated, and does the Cimicifugin (so called) represent the medicinal virtues of the Root?

Accepted by Charles J. Hood, Lowell, Mass.

23. What is the best arrangement for the dispensing counter, securing convenience in manipulation and economy in space?

Accepted by John F. Hancock, Baltimore, Md.

24. Do the powders and concentrated solutions offered by manufacturers for the preparation of Artificial Mineral Waters yield solutions which correspond in composition to the natural products which they are said to represent?

Referred to Aug. Theod. Moith, Fishkill, on the Hudson, N. Y.

25. To what extent is the adulteration of Butter carried? What substances are used as adulterants, and how is their presence detected?

Referred to Henry W. Lincoln, Boston, Mass.

26. Does the sugar coating of Pills impair their solubility? Do the pills containing Alkaloids, those of Quinia, Morphia, &c., as furnished by different factors, contain the amounts stated?

Accepted by James R. Mercein, Jersey City, N. J.

27. What is the quality of commercial Copaiba, and how may adulterations and deterioration be detected?

Accepted by Edward S. Kelly, Boston, Mass.

28. Glacial Phosphoric Acid containing large proportions of Silicate and Phosphate of Soda has been observed in European markets. What is the quality of the Acid supplied in this country?

Accepted by Prof. Albert B. Prescott, Ann Arbor, Mich.

29. Can the swimming-bladders of the fish of the American lakes be utilized as Isinglass? What amount is it estimated could be furnished from the fisheries of the Northwestern lakes?

Accepted by Prof. George M. Hambright, Chicago, Ill

30. What is the quality of Iron by Hydrogen found in the market?

Accepted by Thomas Doliber, Boston, Mass.

31. Does Wood Creasote exist in the American market? If not, what is supplied instead?

Accepted by Enno Sander, St. Louis, Mo.

32. Is an improved formula for Soap Liniment needed? How may the officinal formula be advantageously modified?

Accepted by John W. Ehrman, Chicago, Ill.

33. In how far do the Seidlitz Powders of the market agree with the quantities and quality of the formula of the United States Pharmacopœia?

Accepted by Charles W. Grassly, Chicago, Ill.

34. Powdered Blue Pill of the market. How is it prepared, and how does it compare in strength with the officinal Blue Mass?

Accepted by Prof. George F. H. Markoe, Boston, Mass.

35. What is the relative digestive power of the different powdered Pepsins and preparations thereof in the market?

Accepted by Thomas Doliber, Boston, Mass.

36. From what source is American Cod-Liver Oil derived, and who prepares it for the market?

Referred to S. M. Colcord, Boston, Mass.

37. What is the comparative quality of the different brands of Bicarbonate of Soda in the American market?

Accepted by Charles H. Bassett, Boston, Mass.

38. What proportion of the alkaloids, *claimed* by the several manufacturers, are contained in the different Elixirs?

Accepted by Ottmar Eberbach, Ann Arbor, Mich.

39. What are the so-called Resinoids and active principles now so largely used? Are they uniform in character, as made by different persons, or at different times by the same person? Do they medicinally represent the plants from which they are derived?

Accepted by W. J. M. Gordon, Cincinnati, Ohio.

40. Can the Vegetable Narcotic Extracts be prepared in the form of powder, and thereby secure uniform therapeutical effects?

Accepted by F. Victor Heydenreich, Brooklyn, N. Y.

41. Will a stated percentage of Glycerin added to solid extracts preserve them from drying or change, and thereby secure uniform medicinal results?

Accepted by W. J. M. Gordon, Cincinnati, Ohio.

42. What is the best formula for a Glycerole of Pepsin? Is Glycerin a better solvent for Pepsin than Wine or other menstrua, considered therapeutically and practically?

Accepted by James R. Mercein, Jersey City, N. J.

43. Of what value is Malt Extract (Saccharine) as medicine or nutrition? Does Grape Sugar, Starch, or Dextrin possess the same merit?

Accepted by E. H. Sargent, Chicago, Ill.

44. The commercial value of Glycerin being largely reduced, can it be used with medicinal advantage as a partial substitute for Alcohol and Sugar in the preparation of Tinctures, Fluid Extracts, Elixirs, and Syrups?

Accepted by Joseph Harrop, Leavenworth, Kansas.

45. Are there reasons sufficient to warrant this Association in propounding formulas for unofficinal preparations, with a view to securing uniformity in dispensing?

Accepted by R. J. Brown, Leavenworth, Kansas.

46. It has been suggested that the use of Glycerin in Fluid Extracts is frequently detrimental to their quality, or unnecessary. In what respect is this assertion reliable?

Accepted by George Buck, Chicago, Ill.

47. What is the state of purity of commercial Santonine obtained from various sources?

Accepted by C. Lewis Diehl, Louisville, Ky.

48. Fluid Extract of Sarsaparilla, as prepared by the officinal formula, deposits upon standing. Is it not advisable to use less sugar, and allow some of the alcoholic menstruum to be retained by the finished preparation?

Accepted by J. F. Judge, Cincinnati, Ohio.

49. Vanilla. How can this substance be best exhausted? Give a formula for the preparation of a satisfactory fluid preparation of it.

Accepted by E. P. Nichols, Newark, N. J.

50. Glucose. This substance is now very abundant in the market. What use can be made of it in pharmacy?

Accepted by Joseph M. Hirsh, Chicago, Ill.

51. A plant called Sneeze-weed, growing in the State of Mississippi, is said to be very poisonous to horses. What is its botanical name and its poisonous principles, and can an antidote be suggested to its deleterious effects?

Accepted by Prof. John M. Maisch, Philadelphia, Pa.

52. Who is responsible, the Physician, Pharmacist, or Manufacturer, in dispensing sugar-coated pills or other proprietary remedies?

Accepted by Prof. J. Faris Moore, Baltimore, Md.

53. Spirit of Nitrous Ether varies greatly as obtained from different manufacturers. By what practical process may the proportion of Nitrous Ether in the Spirit be estimated, and is the alcohol strength of the United States Pharmacopœia a proper one?

Accepted by P. W. Bedford, New York City.

54. Does the Vegetable Wax, known in trade as Japan Wax, possess any advantages over Beeswax in pharmaceutical preparations?

Accepted by George C. Close, Brooklyn, N. Y.

55. What are the preliminary educational requirements best adapted to youths expecting to enter stores for the purpose of qualifying themselves for the business of druggist and pharmacist, and what preliminary examination, if any, should be required by the colleges of pharmacy?

Accepted by Prof. Edward Parrish, Philadelphia, Pa.

56. Cantharides have been lately imported into this country from China. Is the insect identical with the European Cantharis Vesicatoria, and what amount of Cantharidin can be obtained from it?

Accepted by Prof. John M. Maisch, Philadelphia, Pa.

Pending the acceptance of this report, the Secretary said:

I should like to make a suggestion to the Chairman of the Committee on Papers and Queries. I noticed that in one of the queries, in speaking of the extract of malt, he used the name of Liebig. Liebig has of late disclaimed any connection with the extract of malt. He distinctly states he never gave any formula for making it, nor is he interested in the extract of malt in any way whatever.

PROF. EBERT.—The reason the Chairman used that name, was to designate it so it would not be understood to mean those beers that are put up under the names of Hoff and Koch. There is some right in the attaching Liebig's name to it. I remember in his lectures he mentions, that at one time he had advised making malt into a syrup for the use of his own children; and that was why I attached his name to it. I will change it, however, and make it read "saccharine."

Professor Ebert suggested that his successor, as Chairman of the Committee on Papers and Queries, be allowed to print notices, to notify the acceptors of queries from time to time. The subject was left with the Executive Committee.

Mr. Joseph P. Remington read the report of the Committee on Adulteration and Sophistication.

PROF. MARKOE.—I have generally kept a pretty watchful eye on the adulterations in the Boston market. I have observed one or two in white castile soap. The Boston market has suffered badly from this article. I have seen samples there of very fine looking white soap, which would deceive almost any one. Being governed entirely by its appearance, people would take it for an exceedingly nice fine article of white castile soap. It had no perceptible odor until after washing; then, in the course of ten or fifteen minutes, the characteristic odor of cocoanut oil would be perceptible. The principal advantage of using cocoanut oil for making this soap is its

capacity for holding in suspension an immense quantitiy of water—much more than any other oil.

The President. — I think the gentleman's remarks are out of order. Any discussion on the report is in order,—anything you may have to say on the report itself.

Prof. Markoe.—I thought any additional observations on adulteration would be in order.

The President.—I don't think so.

Prof. Markoe.—Then I wish to make one observation on a statement made by Mr. Remington, which is likely to do injustice to some honest manufacturers, on the article of vinegar. Mr. Remington made the remark, that many samples would give a precipitate with chloride of barium. That is too delicate a test to use for sulphuric acid, as it will necessarily give a precipitate, because the sulphates contained in the vinegar are decomposed by the chloride of barium. The best test which is applicable, is one that will detect free sulphuric acid, and not react with the small amount of sulphates, namely, chloride of calcium.

Mr. Brady.—I will make one or two remarks touching matters concerned in the very able report that we have listened to with so much interest. I can hardly allow the statement to pass, that English pharmaceutists prefer precipitated sulphur containing 66 per cent. of sulphate of lime. It is, perhaps, scarcely understood here that in England there is an article called "milk of sulphur," which is still a good deal used by the small dealers in country districts, as well as the pure precipitated sulphur, which alone is used in respectable pharmacies. That explanation was made at the time the paper was read by Dr. Redwood, and the matter was fully discussed then. I think it is due that we should not be set down as quite so far lost to a sense of propriety as to prefer precipitated sulphur adulterated with sulphate of lime to the purer substance. One remark in explanation of a matter in which some doubt was expressed I will make, also, and that is as to the price of the extract of calabar bean. I think I can explain the apparent anomaly, that for a considerable time the extract of calabar bean could be bought in England for a price for which it could not be made; the fact being simply that a single firm of manufacturing chemists cleared the market at the rate of a few pence per pound. Several hundred pounds were bought at that price, and extract was made from it; afterwards, the price of calabar beans rose to four shillings or more, this firm was able to supply their extract at a very low price. I have very little doubt that that is the reason of the quotation alluded to. I may say I examined the extract myself, and so far as I can tell, it was a perfectly genuine extract, had full power in contracting the pupil, and probably was the only extract used in England for a considerable time.

Mr. Remington.—That information from Mr. Brady I know will be very useful to every member of the Association, and I am glad to hear it. A number of druggists have spoken of the same thing to me, and I shall be

very glad to tell them in regard to it. In reference to precipitated sulphur, I referred not only to that report which was published in our journals, but to the remarks of Messrs. Attfield and Redwood, and a number of other pharmacists and chemists who discussed the question at that time, and who admitted that the precipitated sulphur, mixed with 66 per cent. of the sulphate of lime, was common in the English market. The English article that comes over here is generally milk of sulphur, as Prof. Attfield terms it, in distinction from precipitated sulphur, while the one that is manufactured here is generally precipitated sulphur. The English article is sold at a less price.

Mr. Brady.—In regard to milk of sulphur, it is not an adulterated article, but it is prepared by the old process of precipitating the alkaline solution of sulphur with sulphuric acid instead of muriatic acid. We hold to old things in England, as you know, and there has been a fancy in country districts for the old white impure sulphur. In a strict sense of the term, it is not an adulterated article.

Prof. Ebert.—I am aware that some sulphur sold in this market is really this adulterated article, and that it is sold by some of the leading houses as a very pure article because it is imported from England.

Prof. Procter.—Referring to the subject of precipitated sulphur, if I recollect the argument used by the British journalists and professors, it was this: that at one time the sulphate of lime sulphur was an officinal preparation in one of the Pharmacopœias, and was presented to the people, and got into use as a legitimate article: that one of the reasons it was now used and its use kept up, is, it is much smoother and easier to take, and even where knowledge of the adulteration is held by the persons that use it, they prefer it, because, like Henry's magnesia, it is much easier to take than the other article, only in that case they are both equally pure, while in case of the sulphur, one is adulterated.

Mr. Doliber.—Mr. Markoe has a few remarks to offer, which seem to me to be pertinent to this discussion on the report on Adulteration.

The President.—In addition to the report?

Mr. Doliber.—Not in addition to the report, but remarks of the same nature as those that have been made.

The President.—I don't think they come under the head of this discussion. I think if any remarks are to be made of general interest, they will come under another head of business.

Mr. Doliber.—It seems to me they come in on the report on Sophistication and Adulteration, the same as the remarks on milk of sulphur.

The President.—I am informed that the usage has been that such communications have been accepted by the Association, and therefore I will rule that Mr. Markoe's remarks are in order.

The Secretary.—It has been usual in scientific discussions to suspend parliamentary rules, and under that custom the remarks would be in order.

PROF. MARKOE.—I knew that had been the custom. I would like to say a word in regard to that castile soap, because it produced quite a commotion in Boston. There were several hundred pounds thrown on to the market, and it deceived some of our best pharmacists, who did not take pains to examine it. Some was offered to the establishment I am connected with, but I took pains to assay it, and found it contained a large proportion of water, which is the principal reason for substituting it for the genuine. In addition to that its very beautiful color was due in large part to the addition of a large proportion of steatite, or French chalk. The sample I assayed contained 25 per cent. of steatite, in addition to the other ingredients. This can be detected instantly by dissolving the soap in water; the soap will dissolve, and allow the steatite to settle. Another preparation noticed in our markets was the oil of santal, which is very badly adulterated. One sample that was examined by me was composed of castor oil as a basis, perfumed by the addition of oil of copaiva and otto of roses, being very similar in character to the oil in the wholesale market under the name of the oil of santalum. I may say that in our market, and also in the New York market, it is exceedingly difficult to get a sample of oil of santal-wood that is fit to use.

MR. SAUNDERS stated that he had seen oil of peppermint adultered with castor oil, one sample containing 25 per cent. of the latter.

The report on Adulteration was, on motion, accepted, and referred for publication.

Mr. Louis Dohme presented the report of the Auditing Committee, stating that the Treasurer's accounts were found correct, and that they desire to express their admiration of the neatness and accuracy with which the accounts had been kept. The report was, on motion, accepted, and the committee discharged.

A report from the Chairman of the Committee on Photographic Album was read by Mr. Charles A. Tufts:

At the meeting of the Association at Philadelphia in 1868, a committee was appointed, consisting of Messrs. Lincoln, Bedford, Shinn, Strehl, and Jeannot, to report upon the following resolution:

Resolved, That a committee be appointed to solicit photographs from members, to be kept in an album to be on exhibition at the meetings of the Association.

Your committee have attended to that duty, and report as follows:

In October, 1868, a circular was issued by the committee (a copy of which is hereby appended), and which was to be mailed by the different members of the committee to those in their vicinity. Card photographs have been received slowly since that time, and although there has not been as full a response to the call of the committee as was hoped, still enough have already

been sent to warrant your committee in making arrangements for the first volume of the album. Your committee, however, are not able at this time to show the fruit of their work, on account of the failure of some of the committee to report. Although the chairman of the committee has written several times to Mr. Jeannot, no answer had been received from him up to the time of writing this report, and as the Association caused his name to be dropped from the roll of members, it seems that others have not had better luck in finding his abode. No return has been made from the States taken by him, and therefore your committee do not feel justified in making a full report at this time without giving those States a chance to be *represented*, especially as they are from the *Southern section* of the country. About 125 cards have been received thus far, and there is no doubt but that many more could be procured upon the personal application of some one in each of the larger cities. The apothecaries as a class are too modest to allow their likenesses to be held up to the common gaze; and solicitation is sometimes needed to secure a card. Also, as the apothecaries are not generally considered as remarkably handsome, this may account in part for the small number sent in. But, in looking over the collection of faces, we think there will be found as good an average of fine-looking and intelligent men as will usually be found in a promiscuous collection. Beauty is not the only quality for which we seek in a picture, and the homely face of a departed friend and brother in pharmacy is more to be cherished than a mere "pretty picture." And as the Association increases in numbers as it increases in years, the albums which may be collected will be considered as invaluable. We would earnestly call upon all who have not already done so, to send a card for the album.

Without desiring to influence the action of the Association, the committee would suggest that the vacancy be filled in the committee, and that slips be inserted into the Treasurer's envelopes when he sends out his bills the next year, asking members to send cards to him, or any better way the Association may suggest.

Respectfully submitted,
HENRY W. LINCOLN,
Chairman.

BOSTON, September 1, 1871.

CIRCULAR.

AMERICAN PHARMACEUTICAL ASSOCIATION.

At the Sixteenth Annual Meeting of this body, held in Philadelphia in September, 1868, the following resolution was passed:

Resolved, That a committee be appointed to solicit photographs from members, to be kept in an album to be on exhibition at the meetings of the Association.

The undersigned were appointed on that committee, and respectfully re-

quest you to furnish them with a card photograph of yourself. The following directions are to be observed:

1st. Each member to send a card photograph of the usual size, with his autograph, address, and the year when taken, written on the lower part of the front of the card; or if there be not room for it to be seen when in the album, the name, &c., to be written on a separate paper, which can be pasted in the album under the photograph.

2d. Those who have, or can procure, photographs of deceased members will confer a favor by sending copies of them also.

3d. As it is intended that the album shall be presented to the Association by the members, each contributor is requested to inclose a small sum to defray the expenses.

4th. Contributors may send to the member of the committee whose address is on the envelope which incloses this notice.

HENRY W. LINCOLN, Chairman, Boston, Mass.
P. W. BEDFORD, New York.
JAMES T. SHINN, Philadelphia, Pa.
GEORGE E. JEANNOT, Louisville, Ky.
LOUIS STREHL, Chicago, Ill.

BOSTON, October 1, 1868.

The report was accepted, and referred to the Executive Committee.

On motion of Prof. Parrish, the Chair was requested to fill the vacancy on this committee.

The Business Committee presented the following resolutions, which were adopted without discussion:

Resolved, That the faculty of the St. Louis Medical College, of the Missouri Medical College, and the medical profession generally be invited to be present at the sessions of this Association.

Resolved, That a committee of three be named by the President, to consider the time and place for the next annual meeting of this Association.

The Business Committee brought to the notice of the Association a preamble and resolutions adopted by the New Jersey Pharmaceutical Association.

MR. SARGENT.—It seems desirable to the Business Committee that a committee be appointed to consider, any time before our adjournment, a communication from the New Jersey Pharmaceutical Association in relation to the revenue tax on apothecaries, which is as follows:

WHEREAS, by an act of Congress, approved July 14, 1870, the provisions of a former act were repealed, allowing the apothecary or retail druggist to sell alcohol and spirits for medicinal purposes, under a license of $10; and

whereas, by such repealer, a retail druggist or apothecary is now compelled, by act of July 30, 1868, to take out a retail liquor dealer's license, the same as a hotel, paying for it the sum of $25, the same as an ordinary vender of ardent spirits for drinking purposes; therefore,

1. *Be it Resolved*, By the New Jersey Pharmaceutical Association now assembled, that we deem the tax of $25, by the Internal Revenue Act, as oppressive and unjust upon a branch of the medical profession, who are obliged to dispense ardent spirits in various ways for medicinal purposes as well as for use in the arts; who have no desire or intention of selling it for drinking purposes, or to make money out of its sale in that way.

2. *Resolved*, That we consider ourselves as well entitled to exemption from license tax as the physician, the dentist, or the lawyer, especially as we are reached by stamp tax on so many proprietary articles; but should it be demanded that we pay a license on account of the small amount of spirits we are obliged to dispense or use in our legitimate business, then we claim, as a simple act of justice, that the tax be $10 for an apothecary's license to sell alcohol and spirits for medicinal purposes, which sum will be ample compensation for the benefits it confers.

3. *Resolved*, That a copy of these resolutions, signed by the officers of this Association, be furnished to each of our Senators and Representatives in Congress, and that they be urged to secure the repeal of that portion of the Revenue Act bearing upon us, or at any rate that the tax be reduced to the amount named in the original law.

Long Branch, N. J., August 16, 1871.

Mr. Sargent.—I move that a committee be appointed to consider the subject, and report at a subsequent session. The intention is to have the committee take into consideration the revenue law in its bearings upon pharmacy.

Prof. Procter.—If this matter is brought up for discussion, I hope the two points will be kept distinct: that of the tax on apothecaries for being compelled to be liquor dealers (for that is what it amounts to), and that of the stamp tax alluded to. The government must be supported by taxation. It has been found in other countries as well as here, that taxing the use of medicines is profitable, and we will have to submit for that reason. People that are sick will do anything to save themselves, and consequently this tax can be easily collected. We ought not to mix these things together. What we would like to see carried is that of relieving the apothecary from the necessity of dealing in liquors further than the absolute need of medicines. The way things are looking now, I think we will all become retailers of liquors for illegitimate purposes. There are few men but will be tempted to push the business of the sale of liquors to a greater extent than the needs of medicine, to pay this tax of $25. I think I can say, that in my business the amount of liquor sold for medicinal purposes does not pay the tax. It is a temptation to sell for any purpose; to push the sale of it

to make money for paying the tax, and not only that, but because the business is profitable.

Prof. Parrish.—I hope this Association will not commit itself, without a good deal of care and deliberation, in favor of a law that would reduce the tax on the sale of liquors. It will never do for the government to allow apothecaries to sell liquors without paying a tax, while they tax tavern keepers for selling it. The difficulty is insuperable, because it would allow any tavern keeper to sell liquors by passing himself off as an apothecary. Any one who intended to make the sale of liquors the leading branch of his business could do so under an apothecary's license. It would be suicidal for the government to allow anybody to sell liquor without paying the regular and full tax upon it. I think the Association had better not go into the question. I have no objection to the appointment of a committee to consider it, but I doubt whether this resolution had better come before us.

The President.—I think it would be well to pass the resolution, if only out of compliment to the New Jersey Society.

Prof. Ebert.—I agree with Mr. Parrish. I hope the thing will not be brought before the Association at all. It will not do any good, and it may do a great deal of harm. I can say that a great many use the mortar and pestle for the mere sake of selling liquor, and we cannot open the door to allow more to come in and sell it under that cover. I hope we will not touch the question. We cannot do any good; for that reason let us not waste our time about it.

Mr. Dalrymple.—I think our friend Ebert misunderstands or misapprehends the object and aim of the resolution. This resolution was offered at a special meeting of our Association. We had not sufficient time to discuss it. It is a matter that all conscientious druggists feel. We judge of the rest by ourselves. It is too true, as our friend Ebert remarked, that the door is open to great abuse, but we feel that the apothecary or druggist should not be compelled to take out a license as a retail liquor dealer. We feel it to be a disgrace to us to be compelled to take out a license the same as any ordinary liquor dealer, and we feel that we ought to be relieved from it. That is why this resolution was offered, and why it was referred to this large association of the druggists of the United States, to discuss it if they wish to take it into consideration. Why should my friend Procter be obliged to take out a license as a retail liquor dealer when the profit on his whole sales would not amount to $25? It is too true that if you go into any town of any size, and ask the question, "How many druggists are there here?" the answer will be, "So many;" and if you ask, "How do they live?" the reply will be, "They all sell liquor." I don't wish to reflect upon the druggist, but he is tempted, as Prof. Procter says, to sell whiskey and brandy, because he is set down by the government as a retail dealer. I don't know that we can get over the difficulty; but it seems to me the druggist should not be obliged to take out a license as a liquor dealer.

THE SECRETARY.—I would like to make a few remarks upon this subject. It seems to me very strange to say, that we as apothecaries should not touch this subject, while the Commissioners of Internal Revenue themselves have spoken about it in their annual reports. A year ago Mr. Delano pointed out to Congress the injustice that was done to apothecaries by compelling them to take out a liquor dealer's license. Under the old law, before 1870, apothecaries were allowed to dispense officinal liquors for medicinal purposes in limited quantities without being subject to a liquor dealer's license. The ruling of General Pleasonton afterwards was, that with the repeal of that clause, and the enactment of the Internal Revenue law of 1870, apothecaries, from the very fact that they were handling liquor, though using it for a legitimate purpose, fell under the requirements of the law, and had to pay a liquor dealer's license in order to dispense officinal preparations. Last summer, as editor of the *American Journal of Pharmacy*, I corresponded with him, and received his reply, in which I think he retracted a portion of his former decision in this way, that we might dispense liquors or alcoholic spirits upon physicians' prescriptions, but not without them. The wording of this latter decision was, however, so obscure, that I do not know whether under it the apothecary is obliged to take out a license or not. It seems to me it would not be more than proper to have a clear understanding on the subject. If we are to be liquor dealers, I consider it a disgrace to the profession. We don't want to be liquor dealers, and that is the reason we ought to touch it. I have no doubt that the great majority of the druggists would not (I hope every member of the Association would not) sell liquor except for legitimate purposes; that is, for medicinal use, and that I think we should be allowed to do without paying a liquor dealer's license. We want to get that slur removed from our business. As it is now, we are liquor dealers, and have to be liquor dealers first before we can be apothecaries. Neither you, nor myself, nor anybody can put up prescriptions without using officinal liquors. If we dispense wine of colchicum, we are dispensing liquor. That is the reason I favor the appointment of the committee. I think very well of the suggestion of Mr. Procter, that the second clause might be left out, though it might be left for the committee to decide.

MR. SARGENT.—In behalf of the Business Committee I would like to explain that the motion was made after consultation with several persons, and it was supposed to embody their desires. I think the intention of combining the two was to have the whole matter in the hands of one committee, rather than in the hands of two. I would like as an individual, however, to say that it has been my opinion at all times, that this Association should be the mouthpiece of the American druggists. It is the only mouthpiece we have, and whether the relation be with the General Government, with the trade at large, or any body, foreign or home, this should be our mouthpiece. It seems to me, on this particular question, there is a way of reaching a solution of the difficulty without the objections suggested by Mr. Parrish and Mr. Ebert. I believe the difficulty would be met best by asking the passage of a law clearing the construction from its obscurity, which cer-

tainly, so far as my experience goes, has attended all the decisions of the revenue department, by clearly exempting apothecaries from the tax. If the special tax of $25 for selling liquors was allowed to remain, and a provision inserted, that apothecaries might use liquors in dispensing without paying the tax, confining the exemption entirely to dispensing, I cannot see any temptation open for anybody to avoid the penalty, and that would seem to me to be an easy way of reaching the matter.

Prof. Parrish.—I have no objection to the appointment of a committee to consider this paper, from the New Jersey Association, and I would so move, if that is not the motion before us. My objection is to referring distinctly to the subject of stamps. I have not heard any reason offered why we should meddle with the matter of stamps. We had a great deal better let it alone, and if we appoint a committee at all, let it be to consider the special subject brought up by the New Jersey Society.

Mr. Dalrymple.—I think the Association misapprehends the stamp question. The reason we referred to stamps is, to show the Commissioner of Internal Revenue, and our senators and representatives, that the druggist is already sufficiently taxed. We don't wish to be relieved, but to show that we were sufficiently taxed.

Prof. Parrish.—As I understand it, the motion was to include the subject of stamps. If that is withdrawn, we all understand it.

Mr. Sargent.—The Business Committee would explain that the subject of stamps is included as Mr. Parrish understands it. It was intended to include, for the consideration of this committee, the relation of the druggist to the internal revenue law.

The President.—I don't see any impropriety in including that for the consideration of the committee, and I will put it to vote in this way: Shall the relation of the pharmacist to the internal revenue law be considered by the committee that is to be appointed?

Prof. Parrish.—My amendment is to refer this communication of the New Jersey Society to the committee. I would like to say, when this law was passed originally, at least during the time the government began to raise funds to pay the debt, our college of Pharmacy was represented in Washington. I was there myself, before the Committee on Ways and Means, and it was our opinion that proprietary articles should be taxed. They were not taxed so high as we advocated. I think it would be a pity now to open the question, how far they ought to be taxed; and, therefore, I propose simply to refer the matter of the liquor tax.

The President.—The original motion is, that the communication of the New Jersey Association should be referred to a committee; and that the committee be instructed to consider the relation of the apothecary trade to the entire Internal Revenue Law. The amendment is, that the communication be referred to a committee without any other consideration.

The question was taken on the amendment offered by Prof. Parrish, to refer the resolutions passed by and communicated from the New Jersey Pharmaceutical Association to a committee for consideration and report.

A division being called for, 35 members voted in the affirmative, and 7 in the negative. The amendment was carried, and the resolution, as amended, was then adopted.

It was decided that this committee consist of three members, and the President appointed Messrs. Robert J. Brown, of Kansas, Prof. Procter, of Pennsylvania, and Charles H. Dalrymple, of New Jersey.

The President likewise appointed Mr. Maurice H. Alexander, of St. Louis, to serve with the Committee on Photographic Album, in place of Mr. Jeannot.

It was now moved and carried, that when we adjourn, we adjourn to meet again this afternoon at 4 o'clock.

PROF. PROCTER.—I thought the third session was to be devoted to the examination of specimens.

THE SECRETARY.—According to the By-laws, the second session is to close with the examination.

PROF. PARRISH.—Does that mean that there will be an organization in connection with it, or that we shall go up stairs as if we adjourned under ordinary circumstances?

THE PRESIDENT.—It seems to me we have to go up stairs during this session, and examine the specimens, and then adjourn to the next session.

The report of the Committee on Unofficinal Formulas was handed in by Professor Moore, and, on motion, referred to the Executive Committee.

The Association then visited in a body the exhibition-room, where they were received by the Committee on Specimens, whose chairman, Mr. C. Lewis Diehl, conducted the President, officers, and members through the spacious hall, calling their attention to the various drugs, preparations, apparatus, and instruments exhibited, and pointing out those which appeared to possess special interest, either from their novelty or rarity, in our market, or from their superiority in properties, preparation, or construction.

The meeting subsequently adjourned till 4 o'clock.

Third Session.— Wednesday Afternoon, September 13th.

The meeting was called to order by President Sander at half past four o'clock. The minutes of the preceding session were read and approved.

J. M. Maisch, the Chairman of the Committee on Legislation, read the report of that committee, which was, on motion, accepted and referred for publication.

On motion of Prof. Ebert, the Committee on Legislation was reappointed for the next year.

The President announced the Committee on Place and Time of next Annual Meeting as follows: William J. M. Gordon, Cincinnati, Moses L. M. Peixotto, New York, and Charles L. Jefferson, Philadelphia.

Mr. Alexander.—I would like to see a member from Missouri added to the Committee on Legislation. The State of Missouri is about to enact a law for the regulation of the practice of pharmacy, and I think it would be well to have upon the committee a member from that State.

Prof. Parrish.—I move that a member from Missouri be added to that committee.

Mr. Sargent.—I will gladly withdraw from that committee, and a member from Missouri can then be put in my place.

Mr. Alexander.—I hope Mr. Sargent will not withdraw. We would like to have his co-operation in this matter.

The motion of Prof. Parrish was carried, and Mr. Alexander appointed for the State of Missouri. That member, however, declined, and suggested Mr. Hubert Primm as a suitable person, who was accordingly appointed.

Prof. Procter read a majority report from the committee appointed last year to consider the feasibility of inviting the International Pharmaceutical Congress to meet in this country in 1876:

To the American Pharmaceutical Association.

Your committee appointed to consider and report upon the suggestion to invite the International Pharmaceutical Congress to meet in this country, respectfully reports:

That in view of the notable period in the history of this country, which will be reached in the year 1876 ("the centennial anniversary of its birth

as a nation"), we are called upon, in common with all citizens of the republic, to manifest our patriotic impulses in a worthy manner, by showing the advancement made in the arts and sciences, and the progress towards a higher civilization. Further, as at that time unusual inducements and attractions will doubtless cause many to visit this country from foreign lands, it is believed that so favorable an opportunity will not soon occur again to bring together in this country the pharmacists of Europe.

It is therefore recommended that the International Pharmaceutical Congress be solicited to postpone the meeting which would occur in its regular order in 1875, and that this Association extend a cordial invitation to that body to meet in this country in the year 1876. But if for any reason the Congress shall deem it not advisable to accept such invitation, it is recommended that an invitation be extended to the delegates present at the meeting in 1872, and to the pharmacists of all nations, to meet with this Association in 1876. Your committee further recommends, that at the present meeting the month of July and the city of Philadelphia be designated as the time and place for the meeting of 1876, it being manifestly appropriate that the meeting of that year should be held in the centre of pharmaceutical and political interest, and in the month dedicated to the celebration of our national independence. The action recommended seems necessary at this time, in order that our annual meetings intervening may be located in view of such decision, and that appropriate efforts may be made to insure at that meeting a full representation of American pharmacists, thereby making this Association a truly national brotherhood of all engaged in our noble profession.

Your committee further recommends that a committee be appointed at this meeting to devise suitable plans and recommend such preliminary arrangements as seem necessary to render the meeting of 1876 worthy of the occasion; this committee to report at the meeting of 1872.

ALBERT E. EBERT,
FRED. HOFFMANN,
Committee.

The report was, on motion, accepted.

THE PRESIDENT.—The question now before the Association is whether it will act upon the report.

PROF. EBERT.—The first point to be acted on would be to decide whether we shall invite the International Congress to meet here in 1876. If we decide upon inviting them to this country, then it will be necessary to elect or nominate committees. If we invite them, it is not certain that they will come. Their regular meeting would be in 1875. We invite them, if at all, for 1876. They would have to put their meeting off one year, and come here in 1876. The question with the minority of the committee was, that they did not consider it practicable for the Congress to come to this country, because the distance is so great. If they feel inclined to come to this country to hold an International Congress, it is for them to decide at the

next meeting, which will be in 1872. We simply give them an invitation. It is the same thing which any city of the United States would do if it invited us to meet there next year. If we decide to invite them, the other questions come up in order.

MR. ALEXANDER.—I move that they be invited.

PROF. PROCTER.—The question that was referred to the committee for consideration was, whether it was practicable to invite them; whether it was to be recommended; and it was on that ground—the question of practicability—that the minority decided not to act with the committee. Now it seems to me that this International Association is an Association that has devoted itself solely to correcting abuses that exist in Europe in the laws bearing on the profession there, and whenever questions of science, such as those that pertain to the alkaloids, and others of great importance, were brought up there from time to time, they have never touched them, but have always devoted their time to the laws bearing on the practice of pharmacy, with a view to the amelioration of the condition of pharmacists; and it appears to me, that if each country of Europe, to the extent they do it there, should transfer its delegates to this country, to act here just as they do there, to be perfectly impracticable to carry out the idea. Therefore, inviting it is mere courtesy, without any real expectation that they will be able to meet us. On the other hand, if you choose to extend an invitation to the pharmacists of Europe to meet this Association in 1876 in Philadelphia, in July, and take any means you choose to facilitate their coming, interesting wealthy men to help the matter along, and making arrangements by which the pharmacists of Europe could come here at reduced prices, and in that way have a visit from the European pharmacists, that is all well enough; but for that International Congress to meet here, under the circumstances under which they meet in Europe, I don't think it is practicable, and don't wish to advocate it.

MR. BRADY.—I will say one word to this point, as coming from Europe. I was one of the deputation which was appointed by the Society of Great Britain to attend the International Congress in Paris a few years ago, but was unfortunately prevented from being there. Some of our representatives attended the last International Congress at Vienna, and I can very much confirm everything that Mr. Procter has said. It strikes me that the nature of the business that is transacted at those conferences is such, that there is very little that could be brought into harmony with your own organization; that any meeting that was held by the International Congress must be something entirely distinct from your own convention business. I know it was the intention a little while ago, and I know it is still, to invite the Congress to London at its next meeting, and I know the feeling at Vienna on the last occasion was that London would probably be the next point selected, were the Congress invited there. I don't say this in any way to dissuade you from inviting the Congress, only it seems to me, I for one living at a distance would be very much more likely to attend a regular meeting of this Convention held at Philadelphia, at so well known a pharmaceutical centre

as Philadelphia, upon a general invitation of a character such as has been described, issued for your own regular meeting. I am sure there are many who would be much more likely to pay the compliment (if it be a compliment to gratify themselves) of coming to a meeting of your own Convention, out of respect for their brethren in America, than would be likely to come to attend what has never attracted any large amount of public appreciation in Europe,—the International Pharmaceutical Congress. The subjects discussed by the International Congress have been exactly as Mr. Procter has stated; subjects which bear very differently in their relations in different states, and are of very varying interest and importance to different states. I don't know that last year's Congress brought up any idea that was of any great value to us.

Mr. Ebert.—In reply to that I would say, that if the International Congress came to this country, there would be questions brought up that would be suitable for our country as well as the countries there. When they met in Vienna, questions arose in relation to the very state they met in. When they met in Paris (I was present at the time), the questions brought up were of that character that specially related to the practice of pharmacy in France. When they come to this country by invitation of this Association, the discussions would naturally have a bearing upon our own state of pharmacy, or some subjects connected with it. If they go to London, which Mr. Brady says is very likely, they will certainly use the English language. It will very likely be nothing more than a compliment to send the invitation. There are a great many difficulties which will prevent them from coming. But this report does not stop there. It at once puts it before that meeting, and states that should they not come, we extend an invitation to all pharmacists throughout the whole world to meet us in 1876, independent of the National Congress. That will be published in their next proceedings; it will go all over the world, and advertise the very thing that we want to have known. It will bring the matter to their notice, and if they want to come, they will have an opportunity to come as well as by individual invitation, and it is probable that more will come by this invitation. If we should invite the whole world to meet us in 1876, we will have to make a great deal of publication through some other source. This will do it at once, and I see no objection to inviting them as an Association.

The Secretary.—I would like to say a few words upon that subject. I know, as Prof. Procter and Mr. Brady have remarked, the results of all the discussions of the International Pharmaceutical Congresses thus far held—to bring those results together—amount to very little. The reason has been stated by Prof. Procter. It is just this: that they have been discussing subjects which had a particular application to the country in which they met. If they should come here, we are very well aware that the state of pharmacy in this country, and the conditions under which pharmacy works, are so essentially different from those existing in Europe, that we shall try to bring up other points for discussion; scientific questions; something which will interest them as well as interest us; something which will

have a tendency to elevate the standard of pharmacy generally, not merely the legal regulations as they exist here or there, but the standard of pharmacy throughout the world. It seems to me that the objections which have been raised against inviting the International Congress do not hold good. By inviting them we bring the matter directly before a certain class of pharmacists; if they do not accept it, of course we shall not feel bad about it. We should like to see them anyhow, whether they come as delegates or as private individuals; and I perfectly agree with my friend Ebert, that it is far better to invite a few, or invite the delegates of a few associations, than to invite the whole world, when you may be sure that nobody will come. I am certainly in favor of extending the invitation.

Mr. Sargent.—Allow me to draw one inference from what has been said by Mr. Brady, that the intention is to invite the International Congress to meet with this Association. Such I do not understand it is to be. It is an invitation proceeding from this body to the International Congress to meet in this country, but not with us. It seems to me that that solves the whole difficulty.

Prof. Procter.—That is the idea; that they should meet here, and we should send delegates to them exactly as if we sent them there. If we send three delegates, we should have three votes, although we might have 500 members.

Prof. Ebert.—We would have in this country more than three votes. This Association will have three votes, and every college of pharmacy in the United States will have three delegates. I was a delegate to the Paris Congress from the Chicago College of Pharmacy, and the Chicago College of Pharmacy was credited with three delegates, if they didn't have but one.

Prof. Procter.—Mr. Ebert will recollect that Mr. Robinet, who was very active, and did more talking than any of the others, said the votes would be apportioned according to the status of the countries. Four votes were given to the United States, and the amount required to pay the expenses was collected on the basis of the votes.

The question being taken on the motion to invite the International Pharmaceutical Congress to meet in the United States in 1876, a division was called for, when 33 members voted in the affirmative, and 2 in the negative; so the motion was carried.

It was then moved and carried, that in case the International Pharmaceutical Congress should not accept the invitation, a cordial invitation be extended to the delegates to the next Congress and to all pharmacists of foreign countries.

Prof. Ebert.—The next recommendation of this committee is that the month of July and the city of Philadelphia be designated as the time and place of the meeting; and if for any reason the Congress shall deem it not

advisable to accept such invitation, it is recommended that an invitation be extended to the delegates to the meeting of 1872, and to the pharmacists of all nations, to meet with this Association in 1876. That is, if they do not accept this invitation as a body, we will extend an invitation to them individually to meet here.

PROF. PARRISH.—I think that is so obvious that there will be but one opinion upon it. I suppose we should be glad to see all that can come, whatever we might think of the expediency of holding the International Congress here. For one, I heartily approve of it, and think if the Association should devote itself from now to the proper time to preparation, we could have a grand meeting, that would do credit to Pharmacy the world over.

MR. O'GALLAGHER.—I should like to know where the meeting is to take place?

THE PRESIDENT.—Philadelphia.

MR. O'GALLAGHER.—I will make an amendment. I think it ought to be in St. Louis. St. Louis is going to be the centre of civilization in this country. It was a great mistake that the Declaration of Independence was signed in Philadelphia at all. The time is coming, and not far distant (and that is the reason I offer the amendment) when we shall inaugurate the President of the United States here. I would certainly be of the opinion that the Association should meet in Philadelphia, St. Louis, or some other large city. I think the English language is good enough for us all to express our views in, and I hope the Proceedings will be in English. I think there are many members here that have not understood the question, and that is why I rise to explain.

PROF. PARRISH.—The question arises with me, whether in fixing the time in July the committee have done wisely. The exhibition of all nations will continue until late in the autumn.

MR. MCKESSON.—I should like to hear the recommendations of the committee read.

MR. EBERT read from the report, "If for any reason the Congress shall deem it advisable" to "centre of pharmaceutical and political interest, and in the month dedicated to the celebration of our national independence." (See page 71.)

MR. MCKESSON.—I offer, as an amendment, that the word "political" be stricken out.

THE SECRETARY.—That clause is no part of the motion. The motion is simply this: that the meeting, in 1876, take place in Philadelphia in July. The clause which Mr. McKesson refers to is simply a quotation from the report.

MR. MCKESSON.—Then I withdraw the amendment.

PROF. PARRISH.—July is an exceedingly hot month, and excursion parties that will be formed across the water to come and return, will have tickets that will have a duration of some months; and it seems to me that it should

be later in the season. I think it would be better to have it at this time of the year.

PROF. PROCTER.—This discussion, I believe, is in reference to the time. It is probable that one of the least of the points of interest with those that come, will be this pharmaceutical meeting. The main points will be the great matters connected with the celebration of the independence of the country that will take place in July.

PROF. PARRISH.—The leading feature will be the industrial exhibition. That will last all summer.

PROF. PROCTER.—That is supposition.

PROF. PARRISH.—Nobody is coming from Europe to see the celebration of the 4th of July in America

PROF. PROCTER.—I thought the whole affair was to celebrate the 4th of July.

PROF. PARRISH.—It is, as far as we are concerned.

PROF. PROCTER.—I don't suppose those that come from abroad will think as we do about it; but they will come here to witness the ceremonies, and the great matters that are to be carried on at that time.

PROF. EBERT.—Would it not be better to leave the time to the Committee of Arrangements, whoever they may be? Just say that we will invite them to the city of Philadelphia. I will make that motion.

MR. MCKESSON.—I move as an amendment that the word "summer" be used instead of "July."

THE PRESIDENT.—As the question now stands, the time is not under consideration. The proposition now is, that the meeting in 1876 shall take place in Philadelphia.

The motion that the meeting in 1876 shall take place in the city of Philadelphia, was adopted.

MR. PEIXOTTO.—I move that a Committee of Ways and Means, to consist of five members, be appointed by the Chair, to report at the next meeting of the Association.

MR. SARGENT.—The motion, if I understand it, is for a Committee of Ways and Means. I do not understand that to be the object or recommendation of the committee. The committee recommend that a committee be appointed to report what they deem necessary to be done after 1872; to lay out a programme for our action. That is all, I suppose, this committee is intended to do, and all they can do. They are to be appointed with a view to bringing the matter more directly before us, so that we may know what we can do.

THE PRESIDENT.—It is the opinion of the Chair that that would be the way to do it, and then appoint, in 1872 or 1873, a Committee of Ways and Means to make arrangements for 1876. The Chair has only, however, to lay before the meeting the resolutions that are offered.

THE SECRETARY.—Would Mr. Peixotto have any objection to calling it a Committee of Arrangements?

MR. PEIXOTTO.—Not at all.

THE PRESIDENT.—The motion is that a Committee of Arrangements of five be appointed by the Chair to report at the next meeting.

The resolution was adopted.

THE SECRETARY.—I am exceedingly sorry that I have not with me the answer received from the Directory of the North German Apothecaries' Association to the address sent out there by the committee appointed by the Association last year. I had everything ready, as I thought, to bring on to this meeting; but being suddenly taken sick, just before starting for this meeting, I have left the letter behind. If the Association will give me leave to print the answer in German, and of course a translation, I shall do so with the greatest pleasure.

On motion of the Business Committee the Secretary was directed to print the answer received from the North German Apothecaries' Society, and a translation of the same, in the Proceedings for the current year.

The answer is as follows:

AN DIE AMERIKANISCHE APOTHEKER ASSOCIATION:

Die Amerikanische Apotheker Association, hat uns im November, 1870, so herzliche Glückwünsche zu unserem 50 jährigen Stiftungsfeste geschickt dass wir nicht umhin können diese mit ein paar Worten zu erwidern.

Wir gehen Alle von dem gemeinsamen Gesichtspunkte aus, dass die Pharmacie nur unter der Leitung von Standesgenossen gedeihen könne. Dahin zu gelangen, das ist unser Bestreben gewesen, so lange unser Verein besteht. Die Pharmacie—wenn sie auch mit dem Untergang der Medicin ihren Haupthalt verlöre—hat sich trotz dieser zu einer Selbstständigkeit erhoben, sie hat dieser durch ihr hauptsächliches Studium der Chemie, Physik und Botanik bedeutenden Vorschub geleistet, und man wird ihr diesen Platz um so mehr lassen müssen, als sie selbst, wie die verwandten Fächer, zu gross ist, als dass sie einem solchen untergeordnet werden könnte.

Diesen Standpunkt der Pharmacie, den sie sich in wissenschaftlicher wie theoretischer Beziehung errungen, auch in praktischer zu behaupten, das ist —wie gesagt—seit lange unser Streben gewesen, und indem wir alle verwandten Vereine bitten sich mit uns in diesem Streben zu vereinigen, wollen wir hoffen, das es uns gelingt, es dahin zu bringen, die Pharmacie auch von Staatswegen als etwas Selbstständiges anerkannt zu sehen.

Das wird freilich nicht möglich sein, wenn die Pharmacie in dem Lande, in dem sie bisher noch nicht in unbeschränkter Ausübung hat geübt werden dürfen, der allgemeinen Gewerbefreiheit anheimfiele. Es beruht darauf

unsere einzige Hoffnung und wir wollen erwarten, dass die traurigen Erfahrungen in den Ländern, in denen allgemeine Gewerbefreiheit der Pharmaceuten herrscht, unsere Regierungen vor dem grossen Fehler, diese einzuführen, bewahren werden.

Gelingt es uns, davor bewahrt zu bleiben, dann hoffen wir—unterstützt durch die vielen wohlthätigen Stiftungen unseres Vereins—dass es uns gestattet sein werde, die Pharmacie einen allgemein anerkannten Standpunkt einnehmen zu sehen, und der Norddeutsche Apotheker-Verein in Besonderem glaubt, dass ihm nicht der geringste Theil des Verdienstes daran zuerkannt werden dürfte.

Darauf hin bieten wir Ihnen gern unsere Hand und hoffen, dass Sie durch Einschlagen und Festhalten dazu beitragen werden, das Banner der Pharmacie hoch zu halten über alle Missgunst und alle kleinlichen, sich nicht zu unserer Höhe der Situation erhebenden Ansichten.

Namens des Directoriums
Des Norddeutschen Apotheker-Vereins,
W. DANCKWORTT,
Ober Director.

MAGDEBURG, den 14 Februar, 1871.

[TRANSLATION.]

TO THE AMERICAN PHARMACEUTICAL ASSOCIATION:

The American Pharmaceutical Association has sent us such cordial congratulations on our fiftieth anniversary that we cannot forbear briefly to respond.

We are all united upon the common principle, that pharmacy can thrive only under the guidance of pharmacists. To attain such control has been our aim ever since our Society was founded. Pharmacy—though it would lose its main support with the downfall of medicine—has elevated itself to a certain independence; it has considerably aided medicine by cultivating the sciences of chemistry, physics, and botany, and an independent position must be conceded to it, since, like the allied professions, it is too comprehensive to be made subordinate to another.

It has long been our purpose to maintain for pharmacy in its practical relations that position which it has reached in a scientific and theoretical point of view, and requesting all kindred societies to unite their efforts with ours. We trust that we may be successful in gaining the recognition by the state of the independence of pharmacy.

This, however, will not be possible, if pharmacy is to become subject to unlimited freedom of trade in countries in which as yet it has not been practiced without restrictions. Our hope rests in the recognition of this, and we trust that the unfavorable experience of those countries in which the unrestricted practice of pharmacy exists may prevent our governments from its introduction.

If successful in our objects, we hope that, aided by the many humane purposes of our Society, we may be permitted to see pharmacy gain a uni-

versally recognized position, in which result the North German Apothecaries' Society will perhaps not be adjudged the smallest share of merit.

Hereby we gladly offer you our hand, and hope that, by clasping it firmly, you will assist in raising high the banner of pharmacy above all ill will and all ignoble rivalries, which are unworthy of our position.

For the Directory of the North German Apothecaries' Society,
W. DANCKWORTT,
Ober-Director.

MAGDEBURG, February 14, 1871.

The Chairman of the Committee on Papers and Queries announced that the first paper to be read at this meeting was one from our honorary member, Mr. Daniel Hanbury, to be read by Mr. Brady.

MR. BRADY.—The paper which Mr. Hanbury put into my hands is on the exports of Virginia in 1610. There may be some difficulty in reading it, as almost the whole of it is written with the spelling of 1610, and a good deal of it is better fitted to be read in print than even in Mr. Hanbury's beautiful handwriting. The only reason it is given to me to read is that I have read it before.

The paper was read, and on motion of Mr. Bedford, the thanks of the Association were returned to its author.

Prof. Parrish read a paper on Pepsin and Rennet, written by Mr. Clemmons Parrish, in answer to Query 1.

A paper on the Pulverization of Camphor, by Mr. J. C. Lowd, answering Query 2, was read by Prof. Markoe.

PROF. MARKOE.—In order to show the success of this process, I have here a sample, which, owing to the heat it was exposed to in coming from Boston, has become slightly granular. I have seen samples made by this process which after a year's time remained in a fine powder, free from lumps.

Query 3 was answered by a paper on Commercial Extracts of Beef, from Prof. Ebert.

MR. BRADY.—Although I have heard my voice quite often enough in this meeting, I may be allowed still to say one word upon this subject. Mr. Ebert showed me some of his results in passing through Chicago, which greatly interested me, inasmuch as they comprise many of those which, by an entirely different process, Mr. Deane and myself obtained many years ago. Our estimate of the value of some of the extracts which were examined by us agrees with that which he has formed on a different basis. There are two modes of examining *extractum carnis*, which I think may

be adopted with very great advantage by those who are interested in *extractum carnis* as a scientific preparation, both of which we have practiced to a considerable extent. The first is the indication, which may be obtained by making use of dialysis. If it be true, and I believe it is true, that a considerable proportion of the value of *extractum carnis* is due to its crystalloids, it is manifest that in dialysis we have a means by which a very good estimate may be formed of the value of the preparation. But apart from the mere proportion of crystalloids and colloid matter, there is another indication, which for culinary purposes I place a good deal of reliance upon, and that is the length of time which the colloid matter in solution will keep without decomposition. If you will take two or three extracts, notably if you take an experimental extract made at home very carefully as a standard, and take the Fray Bentos or Liebig Company's extract, and dissolve a given quantity of each in equal quantities of water, place them in a drum, bottomed with an ordinary dialyzing medium, such as paper parchment, allowing them to remain for twelve hours, dialyzing in distilled water, you will find a great difference in the condition of the colloid matter left in the drum. You will find in the carefully prepared extract colloid matter that will keep for a considerable time, whereas in every sample I have examined of the Liebig extract, you have after twenty-four hours a colloid which has a very offensive odor. This manifestly shows a tendency to decomposition in the colloids, which should be avoided in any article intended to keep for an indefinite time. The other point I will specially allude to is the use of the microscope. I don't know whether any one on this side of the Atlantic has taken the trouble, or has had the opportunity, of looking into the methods of examining extractiform preparations in relation to their crystalline constituents by means of the microscope. If you take a very little of the extract of meat, and put it on a slightly warmed microscopic slide, just sufficiently warm to soften it to the condition of treacle, place upon it a thin glass cover, and allow it to stand a little while, you obtain the extract in a form in which it may be examined under the microscope, and you may obtain thereby both positive and relative results. If you have a standard of your own making, by which to judge of what an extract should be at its best, I am sure you will be able to tell in conjunction with dialysis the best extract out of a number. Mr. Deane and myself made many hundred mountings, and made examinations not only of the mineral constituents, but of the organic crystalloids, creatin, creatinin, and the like, and concluded that by such means a very fair approximate assay might be obtained. There is one other matter I wish to refer to, and that is the use of tannin as a precipitant for the colloids. Our experience seems to indicate that within certain limits a standard solution of tannin might be made which could be used for comparative purposes, at least in estimating the amount of gelatinous matter, chondrin, and whatever the principle may be contained in *extractum carnis*. It is readily used volumetrically, and with fair approximate results. We were misled in a single sample, and one of the samples that Mr. Ebert has examined, an Australian extract. We found that this extract did not yield us the proportion of precipitate that

we knew it ought to if the gelatinous matter was entirely precipitated by the tannin. We found further on examining it, that either from continued boiling, or from some other reason, the gelatinous matter had been decomposed, forming a more liquid, dark-colored, viscid mass, not precipitable by tannin. The gelatinous matter in good meat, after a cold water extract has been made from it, is a wonderfully permanent substance. It may be kept for weeks at the consistency of ordinary calves'-foot jelly.

THE SECRETARY.—I believe that extract of meat which is entirely free from gelatine is precipitated by tannin.

MR. BRADY.—I never saw any extract of meat entirely free from gelatine or *analogous principles.* I have experimented on cold water extract representing only 2 to 2½ per cent. of the weight of meat employed in ordinary extract of meat. I believe the rule is to work it to 4 per cent. A 2 per cent. extract does yield a notable precipitate with tannin.

THE SECRETARY.—Liebig states that extract of meat that is entirely free from gelatine is precipitated by tannin.

PROF. PROCTER.—I should like to inquire if the alkaloids of meat are not precipitated by tannin.

MR. BRADY.—It is three or four years since I did anything in this matter, and my memory will not carry me so far. When the experiments were made, we carefully guarded against inaccuracies which might arise in this way.

PROF. PROCTER.—A few months ago a paper was published in the *Journal of Pharmacy*, in which the tannin process was recommended to get rid of gelatine, and it occurred to me it might be the means of precipitating the alkaloids.

PROF. EBERT.—My observation in precipitating with tannin is that it is necessary to add the precipitants in great excess, and afterwards estimate the excess; by that means you determine the gelatine. I should like also to call the attention of the meeting to the fact, that while I was making these examinations, I received from Baltimore several specimens of condensed raw beef, which they wished me to incorporate into my report; but as this did not refer to the question, I didn't make any notice of it in the paper. I bring it before the meeting, however, as a sample of the prepared meat prepared by the National Preserving Company. Their circular makes the following statements in regard to it:

"This article is, as its name implies, a new preparation of raw beef, deprived of its moisture by evaporation at a low temperature. By this process all the juices of the meat are preserved in their natural condition, *and the albumen is not coagulated;* consequently nutritive principles of the greatest importance for medical purposes, as well as for health, are here united in a concentrated form, and at the same time soluble and of easy digestion."

The Business Committee offered the following resolution, which was passed:

Resolved, That the hearty thanks of this Association be tendered to the retiring officers for the efficient and courteous manner in which they have performed their duties.

The following resolution, offered by the Business Committee, was likewise concurred in:

Resolved, That the Permanent Committee on the Pharmacopœia consist of one member from each incorporated pharmaceutical body represented in this Association, each delegation present to nominate its representative on the committee; vacancies to be filled, and additional members added in the same manner at each annual meeting of the Association. The committee to choose its chairman, and a meeting of the committee to be held at each meeting of this body.

Mr. Sargent.—The object of having the committee appointed in this way is to secure from each local organization a report, in 1880, upon the Pharmacopœia. At the last revision, I think but three Colleges of Pharmacy reported at Washington; only one, I believe, had a complete report. Thus the revision is thrown mainly into the hands of the physicians. This is to obviate that, by interesting each local pharmaceutical body in the revision, and to get a report from each one, if possible.

On motion, the Association adjourned to Thursday morning, at 9 o'clock.

Fourth Session.—Thursday Morning, September 14th.

The meeting was called to order by President Sander.

The minutes of the third session were read and approved.

Mr. Jefferson.—I move to defer the reading of the answers to the queries, as they will be published in the Proceedings.

Prof. Ebert.—We come together mainly for the purpose of discussing scientific matters, and for that very reason it is essential that papers shall be read. Certainly no one would be willing to write papers for publication a year hence. The very business we come for ought to be transacted.

The Secretary.—I would call attention to article 7, chapter 5, of our By-laws, which provides for the selection of the papers and essays to be read at our meetings. This is one of the duties of the Committee on Papers and Queries, and the Association cannot take this duty out of their hands without altering the By-laws.

The motion to defer the reading of the papers, and refer them for publication, was declared out of order.

The answers to Queries 4, 5, 6, 7, and 8 not being ready, the subjects were continued to the accepters for another year.

Prof. Procter read a volunteer paper, written by Dr. E. R. Squibb, on a liquid preparation of Cantharides for blistering purposes, which was accepted and referred for publication.

Prof. Ebert read a paper, by Mr. R. B. Ferguson, on the extemporaneous preparation of Suppositories, in answer to Query 10.

Mr. Brady.—I must make some apology for bringing before this Association some remarks on suppositories and pessaries in a very fragmentary way, and depending entirely on my memory for the order of the facts and impressions rather than upon written statements. My attention was called to suppositories, and their relation to American pharmacy, by seeing a paper by Mr. Goodman published in the *Chicago Pharmacist*, which did not seem to me, although it was written at some length and with considerable detail, to quite get hold of the right end of the story. It was my intention two or three months ago, instead of offering a few remarks, to be accepted for what they might be worth, to have written a paper giving the views now, I think, adopted by the English pharmacists, in relation to this class of remedial agents. If I may be allowed, I will just refer to one or two papers which I myself have published in the *Pharmaceutical Journal*. Suppositories were introduced into the British Pharmacopœia of 1863. The formulas which were then adopted were far from satisfactory, and my attention having been called to them, I conducted a number of experiments with a view to increasing the efficiency of these preparations. The material that was then proposed for suppositories was a mixture of lard and wax, one presenting no advantages whatever over many other substances, independent of convenience, and having many properties which rendered it very undesirable, such as its liability to turn rancid and the ill effects of time upon it. In the British Pharmacopœia of 1864 we had only two officinal suppositories, morphia and tannic acid. The proportion that was used was 38 parts of lard and 3 of wax. As one result of the paper I presented to the *Pharmaceutical Journal*, in the Pharmacopœia of 1867 the number of recognized formulas was increased to four, and the material used in their preparation was theobroma oil with a small admixture of wax. I begin to think that for our climate the admixture of wax is entirely unnecessary. By the experience I have had with the American climate so far, I should judge that it can scarcely be necessary even here; but, in saying so, I must premise that the theobroma oil be of a perfectly pure quality. There are few things that are more difficult to obtain than theobroma oil suitable for use in medicine. It is usually free from adulteration, but it is not physically in the condition in which it is quite satisfactory for this particular class of reme-

dies, and I attribute to that fact, more than anything else, the difficulty which some seem to have in moulding suppositories. If the theobroma oil is perfectly pure, giving a clean, even fracture, not granular, not white, in other words is free from albumen and water, I take it there can be no difficulty in moulding much more delicate things than suppositories or pessaries. I think the gentleman whose paper has just been read lays a good deal of stress on applying very little heat for a limited time. I agree as to the small amount of heat; but theobroma oil requires, to get it into pure condition, heat applied for a considerable time; that is, for several hours, to get it into the condition in which it has the character of pure theobroma oil. I have brought with me a specimen, such as I look upon as quite satisfactory for our purpose. This sample has been heated and kept hot for many hours at a temperature, I suppose, of from 180° to 200°, and filtered carefully through a thick bibulous paper, and then through fine filtering paper. I believe that specimen will be found to possess the characteristics we most esteem in the article. The question arises as to whether theobroma oil is quite the best substance. I was applied to some time ago by a leading physician, connected with one of our large obstetric hospitals, for vaginal pessaries which should not only be soluble, but also be made of a material that should have fewer objections as to soiling the linen of patients than fatty matter. There was considerable difficulty in the way of making such a preparation, but eventually I think I succeeded to a certain extent. I found a mixture of isinglass or gelatine with glycerin gave me a mass which had few of the disadvantages of theobroma oil, and many advantages over it. This is simply a stiff jelly of glycerin and pure gelatine, which is perfectly fusible in the hand and perfectly soluble in water. It has this advantage in cases where it can be employed: substances easily taken into solution acted with not only more rapidity, but more powerfully than with a fatty basis. Unfortunately I have been unable to obtain any medium of this character which will answer for astringent medicines. Manifestly anything containing gelatine is of no use where tannin or many of the metallic salts are concerned, and the use of this particular mixture has been with us confined to substances like morphia, atropia, aqueous extracts, extract of belladonna, and so on, which are easily diffused in the mass. I have here some vaginal suppositories made with this preparation. I find it necessary to vary the proportion of gelatine and glycerin according to the substance of medicament used for the pessary. For instance, if you use any saline matter, it is almost essential that you should use a larger proportion of gelatine, and we found it quite impossible to make pessaries containing more than five grains of bromide or iodide of potassium. These are, of course, drawbacks. It is not brought before you in any way as a substance which is likely to displace theobroma oil, but one which may, in many cases, serve the purpose desired much better than a fatty basis. Allusion was made in the paper to the size of suppositories and pessaries. I look upon that as a very important thing. It was to this point that my attention was first directed, that uniformity should prevail in this matter. It is a very common thing to see prescriptions with the quantity of any single medicament

simply directed to be made into a suppository or pessary. If we do not have uniformity, we have continual distress on the part of the patients. I believe, for every purpose, the size adopted in our Pharmacopœia for rectum suppositories, fifteen grains, is the best, and it has this advantage also that it corresponds with the French. Then in regard to vaginal suppositories, probably it were better to stick to one or two drachms as the size. The pessaries I have shown here are made in a one drachm mould. One word in regard to moulds. I proposed, some years ago, a form of mould which was made for me by Mr. Maw, of London, which I cannot help thinking presents advantages over any other. I can't think that the process such as is described in this paper could be very satisfactory, and it rather seems to me anything but the right method. The mould I employ is made of gun metal, and electroplated. The form is that of a minié bullet. It locks by a bolt at the end. Suppositories may be made very rapidly indeed with it. There is sufficient weight of metal, if the mould is previously cooled, to cool the suppositories very rapidly. I have heard one or two remarks since I came here by those who have used the four-and-twenty suppository moulds, that they are apt to break the suppositories. I attribute that to the quality of theobroma oil used. I believe any one may turn out four-and-twenty suppositories from one mould, if they are made with theobroma oil, and properly cooled. We have another remedy of this sort, known as the urethral bougie, for treating gonorrhœa, which we have made about two inches and a half long, and about the size of a number nine catheter, where one would think that the slenderness of the bougie would be likely to cause fracture; yet I believe any one may turn them out as rapidly as he likes, without danger of breaking. The gelatine that I have employed is Nelson's opaque gelatine. You would have to calculate the equivalent of American gelatine. This is the formula: Three parts gelatine; glycerin, full density, seven; tolerably strong alcohol, one. There is one objection to these soluble pessaries from their very prettiness; and I heard of a case where an accident was narrowly escaped, where a child, supposing them to be sweetmeats, was about to suck a pessary containing one-twentieth of a grain of atropia. This is really a very serious matter, and we have in practice, wherever not ordered to the contrary, added a small quantity of some inert and insoluble powder (powdered French chalk is what I prefer, as being an almost impalpable powder), in order to make them dull. These are the random remarks I have to offer, with many apologies for their incompleteness.

Mr. J. L. Lemberger read a volunteer paper on Urethral Suppositories, and exhibited some samples and the apparatus in which they were made.

The Executive Committee, through Mr. C. H. Dalrymple, presented the following communication, with the recommendation that the gentlemen named therein be elected honorary members of this Association:

To the Executive Committee of the American Pharmaceutical Association:

The undersigned respectfully present the names of the following foreign pharmacists and chemists for election as honorary members of this Association:

Prof. Dr. T. Redwood, London, England.
Henry B. Brady, Newcastle upon Tyne.
Prof. Dr. J. Attfield, Ph.D., London.
Prof. Dr. De Vrij, Hague, Netherlands.
M. Léon Soubeiran, Paris, France.
M. Augustin Délondre, Sèvres, France.
M. A. Chevallier, Paris, France.
Prof. Dr. Adolph Duflos, Breslau, Germany.
Prof. Dr. H. Ludwig, Jena, Germany.
M. Anton Von Waldheim, Vienna, Austria.

Enno Sander,	William Saunders,
Charles A. Tufts,	William Procter, Jr.,
Newton Peirpoint,	Robert J. Brown,
P. W. Bedford,	Frederick Hoffmann,
Albert E. Ebert,	John M. Maisch,
E. H. Sargent,	Edward L. Milhau.

The nominees were, on motion, balloted for, and Messrs. Hancock, of Baltimore, and Good of St. Louis, appointed tellers, who reported their unanimous election.

Professor Procter presented the following report of the committee to consider the imposition of a liquor dealer's license upon the apothecaries:

The committee to whom was referred the subject brought up in the resolutions passed by the New Jersey Pharmaceutical Association in relation to compelling apothecaries to take out a retail liquor dealer's license in order to sell medicinal liquors for legitimate medical use, report, that they have considered the subject and offer the following as their judgment:

1st. That apothecaries should not be taxed as liquor dealers if they confine the sale of liquors to the sick, and require a prescription or other written evidence of its need for medicinal use.

2d. That such sales should be limited in quantity to half a pint or a pint.

3d. That when apothecaries prefer to enter the business of selling liquors with a view to supplying general demand, they should undoubtedly be required to take a liquor dealer's license.

4th. That in either case, we are of the opinion the right of sale should not be construed to permit the drinking of liquors in the apothecary's premises unless for relief in emergencies of illness.

5th. That if these views are acceptable to the Association, a committee be appointed to present them to the Commissioner of Internal Revenue.

R. J. Brown,
William Procter, Jr.,
Charles H. Dalrymple.

St. Louis, Sept. 14th, 1871.

Prof. Parrish.—I move that a Committee of three be appointed by the Chair as suggested by the committee, to transmit a copy to the Commissioner of Internal Revenue.

The Secretary.—I move to amend that the views expressed by the committee in this report are the views of the American Pharmaceutical Association, and that a committee of three be appointed to present them.

Prof. Moore.—I would simply remark that I think it would be of very little use to present that report to the Commissioner of Internal Revenue. The proper place to present it would be Congress. The Commissioner has decided time and time again that it is out of his control, and it will be necessary to have further legislation by Congress, which I think could be had if the proper committee were appointed. I move an amendment to appoint a committee to bring the matter to the attention of Congress.

Prof. Procter.—By altering the wording so as to say "The Commissioner of Internal Revenue, or other proper authority," it would enable you to include Congress, because we may have to begin with the Commissioner.

The amendments suggested were accepted, and the motion agreed to in the following form:

Resolved, That the views expressed in the report of the committee are the views of the American Pharmaceutical Association, and that a Committee of three be appointed by the Chair to bring the subject to the attention of the Commissioner of Internal Revenue, or to other proper authority.

The President appointed the following members on this Committee: Professor J. Faris Moore, of Baltimore, Dr. E. R. Squibb, of Brooklyn, N. Y., and Robert J. Brown, of Leavenworth, Kansas.

Mr. J. P. Remington read a paper in answer to Query 9, on the various grades of Commercial Glycerin.

Prof. Parrish.—I want to make one remark upon the last part of that excellent paper. I am particularly glad that the subject of the dilution of glycerin has been referred to. One of the occasions in which glycerin undiluted is so objectionable, is in making preparations for the eye, which are sometimes made of alkaloids dissolved in this liquid. I have known

physicians to charge it upon the apothecary that he had introduced an irritating substance, such as sulphuric acid, for dissolving the alkaloid when the irritation grew out of the glycerin employed. I was told by an experienced manufacturer of glycerin that he found it, even largely diluted, irritating when used as a dressing.

A volunteer paper on Chloral, by Dr. E. R. Squibb, was read by Professor Procter, and referred for publication.

It having been announced that a large number of papers were in the hands of the Committee on Papers and Queries, awaiting the action of the Association, the Chairman of that committee was asked, whether a synopsis had been handed in with each paper, in accordance with Article 7 and 9, of Chapter V, of the By-laws, which might be read in place of some of them.

PROF. EBERT.—The Chairman of the committee notified each member who had accepted a query, in his last notice, of the article requiring him to do so. In but two instances were they furnished. It is impossible for the Chairman to examine here every paper and make a synopsis. The gentlemen who write papers certainly can do it. They know the pith of their papers, and can submit a synopsis to the committee. All that is left to us is to read the papers in full.

THE SECRETARY.—I am really sorry that the members have been so negligent in that respect. If we are to read all the papers that have been presented, and discuss them, it will take us a long time. I don't know how to get out of that difficulty unless the Committee on Papers and Queries exercise the power given them by the By-laws, and decide to read a number of papers simply by their title, instead of in full.

PROF. EBERT.—I do not fully agree with that. I believe the papers that are presented here by the writers are certainly of such interest that they should be read in full until we get a synopsis. I don't think it would be quite fair to read simply the titles of papers and refer them for publication. I hope we shall go along and make as few remarks as are necessary.

PROF. PARRISH.—We might read them by title and then discuss them. I think the discussions are the most valuable parts of our meetings. The papers themselves are published in the Proceedings, and are read, or may be read by all the members, while the valuable hints and suggestions which are thrown out in the discussions would be entirely lost if the reading of the papers was unaccompanied by remarks.

PROF. PROCTER.—Mr. Parrish says "read them by title and then discuss them;" but we cannot tell what is in a paper by hearing merely its title.

PROF. PARRISH.—I know this; but a large portion of these papers is not of a character to interest a large company, and that could be omitted, and the reading of such papers abridged by the Chairman of the committee.

The discussions upon these papers, as I said before, are something that we should not get in any other way, but the papers are published in full and we can read them at our leisure and study them. The practical observations of the members upon what they have seen and heard, are of value. The subject of suppositories has been slurred over and many interesting remarks have been lost sight of; so with glycerin.

PROF. PROCTER.—I don't see how we can discuss a paper unless we have the nucleus, or hear the paper read. As regards the synopsis, it would be well if we had it.

PROF. PARRISH.—The person who is going to read a paper might take it beforehand and mark it, get at the pith of it and bring that out.

PROF. PROCTER.—There has not been time to do that. Some papers were not received until late last evening.

Professor Markoe, in answer to Query 11, in relation to liquid preparations of chloral, made the following remarks:

PROF. MARKOE.—The query referred to me was whether a liquid preparation of chloral was desirable or not, and if so, what would be the best menstruum to use in its preparation. After many experiments, continued through the year, I am decidedly of the opinion that a liquid preparation is not needed, for the reason that the nature of the chemical is such it is best adapted for extemporaneous pharmacy, and the physician should arrange the quantity he wishes to give in a particular case. Another reason is, that chloral is so very soluble it requires but a minute or two to make a solution. If a solution is made, the only liquid that should be used as a solvent is distilled water; chloral is so very delicate that organic matter of all kinds is very liable to determine its decomposition. If a solution of chloral is kept any length of time in a clean, tightly corked bottle, after a few weeks it becomes acid. An aqueous solution of it, if intended to be kept, should be put into a bottle with a glass stopper. The only case where syrups should be used in connection with chloral, is where the medicine is to be administered very shortly after the solution is made. Therefore, in answer to that query, I should say there is no solution needed.

THE SECRETARY.—I do not regard the crystalline cakes as the most valuable and the most desirable form of chloral hydrate for the apothecary's use. All that I have seen in this condition, whether of German or American manufacture, is so very deliquescent that it cannot be weighed out and kept in an ordinary atmosphere for four or five minutes without attracting so much moisture that the paper upon which it is laid becomes damp and moist. It also decomposes when kept in a dry state, and, after some time, contains such a large quantity of free hydrochloric acid* as to be unfit for use. The

* According to Dr. Versmann's observations, published in the London Pharmaceutical Journal, September 30, the acid reaction is probably caused by chloropicrin, and is due to insufficient purification. EDITOR.

mere neutralization with ammonia does not do away with that tendency to decomposition. I have, on various occasions, added liquid ammonia and carbonate of ammonia to such hydrate of chloral in a state of decomposition, and I invariably found that if the free acid was completely neutralized, and the ammonia even a little in excess, in the course of a day or two the acid reaction was just as strong as before. The only way, in my experience, to do away with that tendency to decompose, is to crystallize the hydrate of chloral from some liquid. At the suggestion of Prof. Flückiger, of Bern, I have used bisulphide of carbon. When properly managed, it will yield beautiful crystals, long needles or prisms, sometimes four or five inches in length. These crystals will keep perfectly dry in an ordinary atmosphere for several days. They do not decompose when kept, perhaps, four or five months, as I have kept them without any sign of decomposition, that is, without generating any free hydrochloric acid. The only difficulty in my experience in the use of bisulphide of carbon to recrystallize hydrate of chloral is, that a very slight odor of the bisulphide remains with the crystals. With proper care, that can be removed in dispensing, by triturating the crystals well in a mortar before it is dissolved. The quantity of bisulphide is so minute that during the trituration it evaporates completely. I do not regard the statement of Dr. Squibb in his paper as entirely correct, that the crystallization of hydrate from different menstrua is not successful. There is hydrate of chloral in the market in well-defined crystals, which keeps perfectly good for a considerable length of time, does not attract, at least not readily, moisture, and does not generate free hydrochloric acid when kept for a long time; my experience does not reach over four or five months. From which liquid, however, that hydrate of chloral is crystallized I am not able to say. The crystals are entirely different from those obtained under various circumstances from bisulphide of carbon. I may repeat, that all the hydrate of chloral in a mere crystalline condition that I have met with is, after having been kept on hand a short time, entirely unfit for use, on account of the generation of anhydrous hydrochloric acid; while, on the other hand, crystallized hydrate of chloral may be kept for a considerable length of time without generating it. For this reason the crystallized chloral hydrate alone should be dispensed.

Prof. Procter.—I don't think Mr. Maisch paid attention to the reading of Dr. Squibbs' paper; he states that he had the chloral in crystals like bromide of potassium, and exposed them without any cover for one or two months in May and June, and they remained fit for use exposed to the air; but when the damp atmosphere commenced, as we know we have had wet weather in that region, they deliquesced. The kind of crystals he recommends are those that crystallize from a slowly cooling solution, so the crystals shall be the full hydrate, and not a mixture of hydrate with unhydrated chloral.

Prof. Ebert.—My experience has been that of Dr. Squibb. I have used these small crystals and dispensed large quantities of them. The result that Mr. Maisch has found with the crystalline cakes I have never observed with

Dr. Squibb's granulated choral. The only difficulty with it is that the small crystals are not quite so soluble as the large. I have not observed any free hydrochloric acid, nor has there been any decomposition. I buy chloral hydrate in five-pound bottles, and I have frequently opened the bottles and tried it by the smell. I have had no trouble in weighing out these small crystals in a scale, throwing them into a mortar and rubbing them up.

Prof. Markoe.—I can only confirm the experience of Mr. Ebert. I have never had any trouble with it.

Mr. Saunders.—I agree with Mr. Maisch so far as the German chloral is concerned, which is almost the only kind in our market in Canada. You can scarcely ever weigh it out without the paper becoming decidedly moist. I have only in one instance found it decomposed.

The Secretary.—My attention was called to the subject by having on hand a quantity of German chloral, which was in the crystalline cake form in which we used to see it, and on opening the bottle at one time the smell was so decidedly objectionable that I didn't know what to make of it. On experimenting, I found it contained such quantities of free hydrochloric acid that I was put on my guard afterwards, and from that day I have not dispensed any except the crystals.

Prof. Parrish.—The thought occurred to me while our friend Markoe was speaking, that every argument he used against a liquid preparation of chloral applied with greater force to a liquid preparation of sulphate of morphia, with the exception, perhaps, that the supposed liability in ordinary chloral hydrate to decompose is greater than in the case of the solution of morphia; both are liable to that objection. I think it is one of the things that we ought to have an officinal standard solution for. It is curious that I have never noticed the decomposition spoken of. I have dispensed it in liquid form, and kept a solution of it on hand containing syrup.

Prof. Markoe.—I know a well-authenticated case in Boston where evil results followed the administration of chloral, and blame was thrown on the chloral, but an examination showed that it was due to improper combination with syrups loaded with organic matter, and very rapidly decomposed. Mucilage at one time was prescribed, but it rapidly decomposes.

The Secretary.—I do not entirely agree with Mr. Markoe until further testimony confirms his experience. In my opinion, a good many of these observations have been made with just such chloral as I spoke of. Use it in well-defined crystals, crystallizing it yourself if necessary, and see if you meet with the same decomposition.

Prof. Markoe.—In some of the experiments the solution was made in pure distilled water, and a like solution in syrup. One acted kindly, the other very unpleasantly. I took it on the testimony of the physician.

Prof. Ebert.—I have used repeatedly a number of the German manufactures, and there is not a single one that was what I considered a good quality, except that of Schering's, while I have yet to see a bad sample of Dr. Squibb's, either his large or small crystals, and these crystals, as Mr.

Maisch says, are the best form in which to use it; it makes little difference whether the crystals are large or small. The German comes to us with a kind of moulded appearance, in a cake. That which I have seen of Dr. Squibb's is in two forms, in large and in small crystals. The reason he makes the two is this: the larger crystal is obtained by the use of heat, and the smaller at a very moderate heat. In selling the article, he gives the choice of the large or small crystals. I have used the small because it is so readily dispensed. You can pour it on the scale-pan without attracting any moisture unless you let it stand some time in the mortar. I have never observed any decomposition; although I have dispensed twenty-seven pounds from Dr. Squibb, I have yet to see the first sample of his chloral that did not give satisfaction, or to hear the first complaint from any physician in the city of Chicago who has used chloral from my store.

Mr. Brady.—I rise to confirm the remarks made by Mr. Markoe, namely, that pure water is the only available solvent for chloral. Alcohol, or liquids containing alcohol, give rise to decomposition. I believe if pure crystals are used there is no danger of decomposition. I have kept a solution for several months, and have never noticed the slightest decomposition.

Prof. Markoe.—When alcohol, or liquids containing alcohol, are added to a preparation of chloral, the usual play of chemical affinities takes place, namely, the formation of a more insoluble compound—the alcoholate of chloral, which is far less soluble than the hydrate.

Mr. Diehl.—I wish to say something in regard to the addition of alcohol. I have for the last six months prepared three or four quart-bottles of the solution of hydrate of chloral for a gentleman living in the neighborhood of Louisville. He has used it with great satisfaction, and has never noticed any change in the solution. He has found the same effect from the solution at the end that he did from the beginning. The solution contained sugar, alcohol, and essential oils.

The President called the attention of the Association to Article 3, Chapter VIII, of the By-laws, providing that no member may speak twice on the same subject, except by permission, until every member wishing to speak has spoken.

Prof. Ebert.—I object to this ruling. We are not a parliamentary body, but come together to discuss scientific questions. Frequently we get up to make a remark, and some one answers it; then we ought to have the right to reply. It is well enough if a gentleman monopolizes the time of the meeting, but I object to this idea of calling a member out of order when he rises to make a remark, because he has spoken before.

Prof. Parrish.—I think it has been customary, on discussions of papers, to suspend the ordinary rules.

Mr. Sargent.—As one of the committee who drafted the present By-laws of the Association, I wish to remark that it was the intention to have introduced into the draft a provision, that during the discussion of scientific

subjects parliamentary rules should be suspended. If it is not now in the By-laws, it certainly was the intention of the committee that it should be there. Parliamentary rules apply only to the business.

THE PRESIDENT.—Being elected presiding officer, I thought it was my duty to draw the attention of the members to the rules that they have made for themselves. I can see no clause such as you refer to.

PROF. EBERT.—It certainly is necessary.

THE PRESIDENT.—I agree to that.

PROF. EBERT.—Statements are made to which it is necessary you should have the privilege of replying at once, because another member gets up and drifts off into something else, when the occasion will be lost.

THE PRESIDENT.—I am well aware of that. I only wish to draw attention to the By-laws. If there is any preference for any other arrangement, it is for the members to indicate it.

PROF. EBERT.—The Chair is perfectly right in his ruling in regard to that. I only wished to state what has been the practice.

PROF. PARRISH.—I will offer a resolution touching this matter. I think we should have some understanding about it.

Resolved, That in the discussion of subjects of scientific and practical character, the customary rules of order shall be suspended; and that where papers will require more than ten minutes to read them, the Chairman of the Committee on Papers and Queries, on consultation with the Chairman of the Business Committee, may direct that abstracts only shall be read.

PROF. MARKOE.—I should like to ask what the bearing of that resolution will be upon papers on subjects assigned by the Association to members.

PROF. PARRISH.—It refers to them.

PROF. MARKOE.—If the Association gives a subject to a member to investigate, and that member investigates it, I think the Association is bound to listen to that paper.

PROF. PROCTER.—I should like to inquire whether this resolution is designed to take effect immediately.

THE PRESIDENT.—It is to be decided whether it can be considered as a resolution, and not as an amendment to the By-laws. It seems to me to be an amendment to the By-laws.

PROF. PROCTER.—We can't amend them without having more time.

THE PRESIDENT.—We can amend them at the next session.

PROF. PROCTER.—If it is to be promulgated that gentlemen who take pains to prepare papers for these meetings, are to send them here to be put down because they are long, or because members had rather hear talk than the elaborations of the laboratory, those gentlemen will not send papers. If we cannot get through in three days, we ought to take four or five.

THE PRESIDENT.—This is an amendment to the By-laws, and according to this view the discussion could not take place until this afternoon.

Mr. Sargent.—I believe the matter of the discussion of scientific questions can be reached quite as easily, and much better, by a simple resolution giving it as the sense of the Association, that the By-law referring to parliamentary rules applies only to business discussions.

Prof. Parrish.—I do not offer this as an amendment to the By-laws. I offer it because I thought on talking with the chairman of the committee and others, at this stage of the meeting, that something was necessary. My object is to try to get through with the business, and adjourn at some reasonable time. I thought the thing would be safe in the hands of the Committee on Papers and Queries.

The President.—I don't think anybody can complain who does not comply with the rules. It is necessary for every one to send in to the Committee on Queries a synopsis of his paper.

Mr. Brown.—It strikes me the arrangements of our meetings are considerably mixed up. There is no system in conducting them, and I think there ought to be introduced into the By-laws a programme of exercises; that during each session a half hour or an hour be devoted to the transaction of business, and the balance of the time to the reading of queries and other scientific matters. I think such a course would assist us, and make the meetings more successful. Then parties who have business to transact will be here, and those who have queries will be present when wanted.

Prof. Parrish.—That was ventilated at the time the rules were adopted, and it was thought better that our members should all be present at all the meetings, and none absent themselves because they did not feel particularly interested. Subjects of great interest are liable to spring up at any time, and it is an inducement to members to be here. It is in the hands of the Chairman of the Business Committee and the Committee on Queries, and if the members comply with the rules there can be no difficulty. If a member does not send his synopsis, it is no hardship that his paper is postponed.

Mr. Sargent.—The great fault this morning has been that the By-laws have not been complied with. They require each person to furnish this synopsis. If that had been done, this discussion would not have occurred. The Chairman of the Business Committee cannot compel people to do it, although the rule is explicit.

The President.—The chairman of the committee can simply delay the reading until the next meeting. If the gentlemen who send in papers do not comply with the By-laws, they have to take the consequences.

Mr. Brown.—It must be evident to every one that there is a great deal of valuable time monopolized in the transaction of unnecessary business, and if there was a special time given for that purpose, it could be done in one-tenth the time.

Prof. Procter.—I think we could have read almost any paper that has come forward while this matter has been discussed.

Mr. Peixotto.—I hope the Chairman of the Committee on Queries will go on with the reading.

THE PRESIDENT.—This resolution is before the meeting.

MR. PEIXOTTO.—Mr. Ebert announced the business to be the reading of answers to queries, and that was put a stop to by the business of the meeting. I think, out of compliment to the chairman of the Committee on Queries, that business should be proceeded with.

The President announced the following committee, to report at the next meeting what arrangements may be necessary for the meeting in 1876, agreeable to the resolution passed at the third session: Professor Edward Parrish, of Philadelphia, Chairman; Samuel M. Colcord, of Boston; Edward L. Milhau, of New York; Professor Edward S. Wayne, of Cincinnati; and George Buck, of Chicago.

Query No. 12, on the Use of Pancreatic Juice, was, on motion, continued to Mr. Hancock.

An Answer, by Mr. Henry N. Rittenhouse, to Query 13, on the Employment of various oils for Adulterating Olive Oil, was read by Prof. Ebert, and the paper referred:

MR. BEDFORD.—In regard to the adulteration of olive oil there are some few facts I may be able to give, which will throw some light upon the subject. A little over a year ago, in connection with some researches in petroleum oil, I was shown a sample of heavy petroleum oil, of which, at that time, over half a million gallons had been sold for the purpose of mixing with olive oil. It was entirely free from odor, of good consistence, and of a bright yellow color, and cannot be detected by any yet known means, except it will not saponify. Since then this oil has been largely manufactured, and I have no doubt that millions of gallons have been used in the adulteration and sophistication of olive oil. The main operation in producing oil free from odor is, that steam is blown through it to remove all the odorous principles.

MR. MCKESSON.—Was it paraffin oil or petroleum?

MR. BEDFORD.—It was not paraffin. I cannot tell just what it was any further than that it is one of the heavy oils of petroleum.

MR. MCKESSON.—I have seen paraffin oil used.

Query 14, on the Active Principle of Wahoo Bark, was continued to Mr. Charles E. Dohme for another year.

PROF. EBERT.—Query 15 was accepted for the gentleman by the California delegation, consisting of Mr. Wenzell and Mr. Perkins. After writing to Mr. Searby several times, I received a letter from him, in which he states his inability to accept a query at this time, and therefore declining to answer it. I move he be excused from answering it.

The motion to excuse Mr. Searby from answering Query 15, was adopted.

Mr. Colcord's paper, in answer to Query 16, on Pharmaceutical Apprenticeship, was read by Mr. Doliber, and referred.

Professor Prescott read a volunteer paper on Pharmaceutical Education, which was accepted and referred:

Dr. Prescott.—I did not design to present a paper upon this subject, but circumstances occurring since the opening of the meeting have caused me to present, very briefly, the views upon a few points which I have held for some time.

The Secretary.—I shou'd be very sorry if that paper was published in our Proceedings without some discussion. I think the paper deserves it. The ground which is taken by Dr. Prescott, I believe, is entirely erroneous, so far as the colleges are concerned. The colleges are not discouraging preliminary education before the apprentice enters the apothecary business; but what they insist upon is that it is wrong to give a pharmaceutical degree before the graduate has had pharmaceutical experience. We grant that as much knowledge in physical and chemical science, and natural history generally, as a young man may possibly acquire before he enters a drug store, is extremely desirable; but we believe that with all his knowledge of chemistry, natural history, and natural sciences generally, he will not be a pharmacist until he has gone through a regular system of training, and that is exactly where the colleges of pharmacy throughout the country differ from the University of Michigan. The colleges of pharmacy are endeavoring to institute a course of practical training in chemistry and other branches of natural science. In a number of colleges opportunities have been given to the young men for such training in the laboratory under the immediate supervision of either one of the professors of the college, or somebody closely connected therewith. It is true that such practical experience in the laboratory is not as yet required as one of the conditions of graduation; but Rome was not built in one day; that will gradually come. I believe that for a number of years past the examinations in the different pharmaceutical colleges have gradually become more and more strict, and they will become more so until they have attained that scientific standpoint which we desire to see all the members of the pharmaceutical profession reach.

The Committee on the Time and Place of the next Annual Meeting reported as follows:

The Committee appointed to select a place of meeting for this Association in 1872, would respectfully recommend that the next Annual Meeting be held in Cleveland, Ohio, on the first Tuesday in September, 1872, at 3 o'clock, P.M.

W. J. M. Gordon, Chairman.

On motion, the report was accepted and laid upon the table for future consideration.

The Business Committee presented the following resolution, which was passed:

Resolved, That the Executive Officers be authorized to appoint suitable persons to represent this Association at the International Congress, at St. Petersburg, in 1872.

Mr. Doliber read the report of the Committee on the Decennial Index as follows:

The committee to whom was referred the General Index, prepared for the Association by Thomas S. Wiegand, respectfully report that they wish to express their unqualified admiration of the thorough and complete manner in which the task has been executed, and that the Index will greatly aid those wishing to consult the valuable contents of the last ten volumes of the Proceedings of the Association.

In regard to the printing of the manuscript, Mr. Wiegand states that if printed in the type and manner of the first General Index, it will require two hundred octavo pages. Your Committee doubt the propriety of adopting this form as being too expensive, as it would probably cost $500, and they therefore recommend that in the composition of the Index a double column page be adopted, and a size of type which while not too small, will enable the Index to be put into about one hundred pages.

The committee would also recommend that the Index be printed with the Proceedings of this Meeting, separately paged, and that two hundred copies extra be printed in pamphlet form.

WILLIAM PROCTER, JR., Chairman.
THOMAS DOLIBER.

PROF. PROCTER.—It may be proper at this time, although the occasion may occur later in the session, that some acknowledgment of a permanent character should be given to our fellow member for his very excellent result, and long-continued labors.

PROF. EBERT.—Let the Committee on Index suggest at a subsequent meeting what is proper.

The committee was continued, according to the suggestion of Professor Ebert.

The Business Committee offered the following preamble and resolution:

It being known that in some cases, worthy members of this Association, owing to adverse circumstances, have after long-continued contribution found themselves unable to longer continue such service, and it being eminently

desirable to retain in our membership all who have shown by active effort an interest in the object of the Association, it is therefore

Resolved, That the President, upon the recommendation of the Treasurer and Secretary, be empowered to remit the annual dues of such members until proper reason for such remission shall cease to exist, and that no report of such action involving personal mention shall be made or published at any time.

Mr. Sargent.—The President's allusion to this matter in the Address is as follows: "I think it would be desirable, and would recommend that the Association empower the President, by and with the advice of the Treasurer and Executive Committee, to remit the dues to such members who being worthy, are notwithstanding in reduced circumstances." The Business Committee in framing the resolution endeavored to make it as comprehensive, and yet as definite as was possible under the circumstances.

Mr. Doliber.—This gives the President, Secretary, and Treasurer power to remit the dues of those members, but we are never to know who they are, or to what extent it is done.

Mr. Sargent.—This action is not advocated by the Business Committee. It comes from the President's Address; personally, I think it to be very good. The resolution does not say that nothing shall be known about it. It says no report of such action involving personal mention shall be made. The Secretary and Treasurer must needs report in their annual exhibit any dues they so remit, but not necessarily to whom they are remitted. If we do this at all, it must be done in a delicate manner which shall not offend the feelings of any honorable member of the Society; that is why the resolution was framed in this manner. There is one case, and perhaps more, known to the officers of the Society where such action is eminently desirable and proper. I suppose nothing more will be necessary in explanation.

Prof. Procter.—I can understand very well why this action should take place in reference to the past, but if I understand it it applies to the future; that these three officers have the power to say that a certain individual member henceforth may cease to pay contributions.

Mr. Sargent.—It says until proper reasons for such remission shall cease to exist. I endeavored to make it as definite as possible, while it must needs be a little comprehensive.

The Secretary.—My friend Tufts and myself, know more perhaps about this particular subject than any other member, for the simple reason, that we have worked so long together in our present capacity. There are occasionally members who are entirely unable to pay the small amount of dues. We have had cases where a member got behindhand and was utterly unable to pay. Knowing him, we kept him on the roll, contrary, in fact, to the Constitution, because we ought to have dropped him after three years. In one case, a member was nine or ten years behind. He got into better circumstances and paid every penny. I happened to know him personally; I knew his circumstances, and advocated with my friend Tufts retaining him

on the roll, and I have not the slightest doubt that he will be one of our most useful members in the future aside from the payment of his annual dues. We now know of several very similar cases where members came into reduced circumstances and are unable to pay. That is the reason we suggested that to the President, and I do not believe that the discretion which is given to the three officers will ever be applied to any improper use; the Association will certainly have that much confidence in them to allow the names to be withheld, although the facts will be given to the Association.

The resolution was adopted.

The Business Committee likewise offered the following:

Resolved, That the Executive Committee be directed to annually revise the list of societies, libraries, and individuals to whom complimentary copies of the Proceedings shall be hereafter sent.

This action should have been taken last year. It was omitted through some neglect, although recommended last year by the Permanent Secretary and by the President.

THE SECRETARY.—In explaining the object of this resolution, I would state that under the resolution passed in '65 or '66, wherein the Association directed the printing of the list of individuals, journals, societies, &c., who receive complimentary copies of the Proceedings, it is expressly stipulated that this list should annually come up before the Association for amendment and for general revision, but it has never been done, notwithstanding the Secretary has repeatedly called the attention of the Business Committee to that fact, for the simple reason, probably, that it cannot be well discussed in the open meeting. The Executive Committee, including the Permanent Secretary, did not consider it within their power to cut off or extend that list very materially, unless the resolution passed in 1866 be rescinded, and the power transferred to the Executive Committee.

The resolution was adopted, after which the Association adjourned until three o'clock, P.M.

Fifth Session.—Thursday Afternoon, Sept. 14th.

The meeting was called to order by the President; the minutes of the fourth session, as read by the Secretary, were approved.

On motion of the Business Committee, it was

Resolved, That the Committee on the Liquor Dealers' License of Apothecaries be increased to five, including one member from New Jersey.

The Chair appointed Messrs. C. H. Dalrymple, of New Jersey, and M. F. Ash, of Mississippi, the two additional members.

Mr. William Saunders read a volunteer paper entitled Pharmacy in Canada, which was accepted and referred.

Mr. Meyer.—It is not perhaps universally known to the meeting that at this time the North German Apothecaries' Association holds its fifty-first annual meeting. It occurred to me to be very proper to send our greetings to that Association, this day convened at Dresden, and I therefore make a motion that the Secretary be requested to send the following message by the Atlantic cable:

To W. Danckwortt, Dresden, Germany.

American Pharmaceutical Association sends fraternal greetings to Norddeutschen Apotheker Verein. Maisch, Secretary.

Prof. Parrish.—I wish to say that for one I very cordially approve the motion, and hope that those members who may not have been listening will give ear that we may have a large vote in favor of it.

The motion of Mr. C. F. G. Meyer was unanimously adopted.

Mr. C. Lewis Diehl exhibited and explained the diagram of an apparatus, constructed and employed by him some years ago, in preparing liquid ammonia. On motion, the diagram and paper accompanying it were referred to the Executive Committee for publication.

The Business Committee offered the following preamble and resolution:

The practice adopted by the United States Government of imposing fines and penalties upon druggists for unintentional omissions in stamping medicines and perfumery having become prevalent throughout the country, and a system pursued by the aid of detectives acting in an official or semi-official character of virtually forcing an infringement of the law, it is

Resolved, That this subject be referred to a committee of three, to report on what action will best secure a remedy for these abuses.

The President.—I thought it was agreed upon yesterday not to touch that question. If druggists are liable to the stamp tax, they are liable to the penalties of the law if they violate it.

Mr. Sargent.—The difficulty is, as represented by quite a respectable number of our members, that we are open to suspicion on the part of the government. We are not allowed the ordinary indulgences. Omissions are regarded as criminal in intent, and that is the abuse it is intended to reach. We do not desire to avoid the tax, but proper representations unquestionably would produce different treatment.

The President.—It ought to be discussed; but I think that abuse depends upon the greediness of the officers. The detective system brings all

these annoyances. They try to convict a person in order to get the informer's half of the fine. The collectors, or whoever may act as informer, don't care whether a man has violated the law intentionally or not. They want to fleece him out of some money.

MR. SARGENT.—I wish the Association to hear the experience of Mr. George Buck.

MR. BUCK.—I have been given to understand that the same course of which I complain has been pursued throughout the country. I regard the wording of that resolution as very proper. It is the prosecution for the unintentional omission of stamps that should be complained of, and I think we have just cause of complaint. If we are entitled to anything from the government, it is protection. We are good citizens, and they have no right to prosecute us for unintentional violations of law. I don't know what the experience of others has been, but I suppose it has been general. In Chicago the practice has been once in two or three years to visit every store, and if they saw things accidentally omitted to be stamped, we were complained of and systematically fined unless we appealed, which we did not do because it takes too long. The last time we were fined, a detective came into the store when a portion of us were at dinner, and called for a small quantity of cologne; the clerk gave it to him, and the next day we had a notification from the officer to call at his office where he told us that the cologne had been sold without a stamp. The clerk, knowing it to be our rule to stamp everything according to law, said he could not swear whether he did stamp the vial or not; his impression was he did. We were fined $50 and costs, amounting to $86. The officers looked through our store, and saw bay rum without a stamp. I said I always understood that was not subject to stamp duty. They then went through the city, and found that nobody was stamping bay rum. They said we were liable to the penalty in every case, although we were omitting the stamp without knowing it was required. I complained that we should not be fined for a thing we did not know; that government should apprise us of what should be stamped. They referred me to the law, and I showed them that the law reads differently in different parts. It says medicines should not be exposed for sale without a stamp; but it does not say that perfumery is not to be thus exposed. I referred them to the commissioner and he said, "If that is the plea upon which you stand, and you so understood it, it is my opinion you should not be fined;" but I was fined. Mr. Hazard, of New York, wrote me that they went through his Lubin's case, and found two or three bottles without stamps; all the rest were stamped, but they fined him, although it was evident that they had been stamped. He appealed, and after two or three years the fine was refunded. I think the wording of the resolution comes within what is required, and I consider it very desirable that some action should be taken.

MR. ELLIS.—I understand that bay rum is to be stamped with 4 per cent. We send out a barrel of bay rum, and it requires $3.12 worth of stamps. If we make up a barrel of bay rum, we put on the head of it the stamps and the market value. The stamps are renewed every time the barrel is refilled.

We cannot be too particular on these points. The detectives are continually going round. When they came to us they were very kind. They found a great many things that were not properly stamped, and very kindly let it pass.

THE SECRETARY.—Do I understand Mr. Ellis to say that every wholesale package of bay rum and similar articles requires to be stamped? Of course, retailers are required to stamp their retail sales.

MR. ELLIS.—That is the instruction we received.

MR. SARGENT.—I would like to make a remark. The point in regard to bay rum is very peculiar. Bay rum, which comes to this country from St. Thomas, pays the tax incident to a distilled spirit. The government receives it through the custom-house as distilled spirit. It pays the stamp tax in the same way that a barrel of alcohol does, in proportion to its strength. Upon entering this country the government changes its character altogether. There they say it is perfumery. It is no longer a distilled spirit; it is perfumery, and the wholesaler must stamp it. Then, in addition, the retailer must stamp it again, if he sells it; and the barber who may happen to sell it stamps it again if he changes its form.

MR. DALRYMPLE.—I hope to hear the question fully discussed before it is put to a vote. There are some of the members who have not understood the scope of the question. I dare say it is a common matter to every one. I have yet to learn that druggists are such a set of unprincipled people that they must be treated in the way they have been in our large cities. All other organizations and societies would combine against it.

The resolution was adopted, and the following committee appointed by the President: Messrs. George Buck, Chicago; Augustus Breunert, Kansas City, Mo.; and E. L. Milhau, New York.

Query 17, on the Production of Castor-oil within the United States, was continued to Mr. Crawley for another year.

No answers had been received from Mr. Samuel Campbell to Query 18, and to Query 21, which had been accepted by Mr. Campbell for Mr. H. C. Archibald. Professor Procter and the Secretary reported that the acceptors were engaged with the subjects. The queries were, on motion, continued to both members.

Mr. Louis Dohme requested more time to report on Query 19, relative to the Deposit in Tincture of Bloodroot. The subject was continued to him.

Mr. Bedford read a paper on Commercial Subcarbonate of Iron, in answer to Query 20, and exhibited four specimens from leading manufacturers, which had been examined by him.

Mr. Rice, in answer to Query 22, read a paper on the Morphia Strength of Tincture of Opium, as usually dispensed.

PROF. EBERT.—In relation to opium, I should like to inquire whether it is generally known that poppy culture was carried on in the United States, some fifty years ago, for the purpose of raising opium. A short time ago, I had a conversation with a person who had resided in Fredonia, N. Y., and was informed that at the time previous to the finishing of the Erie Canal, and to the building of railroads, that country was owned by a Holland company, and leased out to squatters, who paid their rents by the cultivation of such material as was easily transported to Albany by wagon. Among other plants they raised the poppy, and the description given of the puncturing of the capsule was similar to that carried on in the East. The person that related this fact to me, stated that he was aware of five acres having been under cultivation. The puncture was made in the morning, and the juice collected on pieces of glass, made into a ball, dried in brick ovens, then carried to Albany, and used to sell there at quite a high price. It was one of the revenues they derived from their land. Why I bring it up is to inquire whether it is known that this opium contained any morphia, or whether it was simply the extract of poppies.

THE SECRETARY.—Sixty years ago, opium was raised in the United States, during the war between the United States and England; and the Association received information on that point from Mr. Henchman, at the last meeting held in Boston.* The opium, he said, was of good quality; and after the close of the war they tried to increase the yield, and mixed extract of poppy with it, in consequence of which they afterwards could not sell it, and the growth of opium was soon discontinued.

Mr. Bakes' answer to Query 23, on the precaution against mistakes in dispensing poisons, was read by Mr. Remington and referred.

Professor Procter read a volunteer paper by Dr. E. R. Squibb, on Litmus Paper, which was accepted and referred.

In answer to Query 31, Professor Markoe read a paper on the amount of magnesia and citric acid in commercial citrate of magnesia.

PROF. MARKOE.—In justice to those who make true magnesium citrate I would say, they have evidently put in as much as would remain in solution. The only officinal one I had, was the sample manufactured by Sargent & Co., but that was worthless as a commercial article, as certainly more than half of the magnesia contained in it had precipitated, and the remaining solution was probably of less strength than Hegeman's and others who made it as strong as they could, without causing precipitation.

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* Proceedings American Pharmaceutical Association, 1865, p. 51.

Mr. Sargent.—We do not make citrate as a commercial article. We dispense it on the same day it is made invariably, and have never done it in any other way.

Prof. Markoe.—I took that to show it could not be made according to the officinal formula and be thrown into the market. I asked Mr. Ebert to send them on to me as representing the Chicago market, and examined them all.

Prof. Ebert.—I did not understand that Mr. Markoe wanted only samples of wholesale manufacturers, and I sent him samples of citrate of magnesia as sold in Chicago. I supposed he was going to make one hundred analyses, so I obtained some from the retail and some from the wholesale stores; and it seems that the former were citrate while the others were different. Messrs. Sargent, Whitfield, and Bluthardt, all retail druggists there, only make it for their own sale.

Prof. Markoe.—The object of the query was to represent the thing in a commercial point of view. It would be impossible for anybody but a chemist who had nothing else to do, to analyze every sample, and the only way was to take the market supply.

Mr. Sargent answered Query 37, in reading a paper on a permanent solution of citrate of magnesia.

Mr. Sargent.—This query follows so closely to the other which Mr. Markoe has answered, that the ground is almost covered in the same manner by the two reports so far as it is a scientific question.

Prof. Markoe.—I would say of these samples that none of them were labelled citrate of magnesia of the Pharmacopœia, but claimed to be only individual preparations.

Prof. Parrish.—In listening to these papers I have been interested in the remembrance of the first introduction of the solution of citrate of magnesia into this country; since that, I am confident, that in a retail way, I have made and sold many thousand bottles, and I presume many of us have. I consider it one of the simplest and easiest preparations to dispense. There is not the least possible trouble about it, and it is fortunate that there is a preparation in the Pharmacopœia that everybody must make for himself, or else not keep it as it ought to be. In travelling over the country and finding citrate of magnesia such as has been detected by these analyses, I am astonished to think that not every man in our fraternity has wit enough to make his own citrate. It is very easy to make. You may make enough to last a week or two, with perfect safety, without precipitation. Nearly every day, probably, it is made often by my youngest apprentice in the store.

Prof. Ebert.—I should like to ask if he can make citrate of magnesia that will last two weeks?

Prof. Parrish.—Yes, sir.

Prof. Ebert.—Made according to the formula of the U. S. Pharmacopœia?

PROF. PARRISH.—No, but according to a formula published before the officinal formula, and substantially the same.

MR. DIEHL.—Since I have been in the retail drug business I have made a solution of citrate of magnesia according to the old formula of the Pharmacopœia, using carbonate instead of calcined magnesia. I did not have the old formula at the time, but calculated the quantity of carbonate that would be required. I have prepared citrate that is in every respect stable for a month if kept in a cool place.

PROF. EBERT.—I would like to ask whether Mr. Diehl examined each time his carbonate of magnesia, for I know the fact, that the carbonate of magnesia we get is different, in regard to the water it contains, at different times; so it is not a definite compound.

MR. DIEHL.—That is true, but I use Jenning's magnesia and find it very uniform. I use the officinal quantity of acid, and then I calculate the amount of carbonate that is, according to its composition, necessary.

THE SECRETARY.—I would ask whether Mr. Diehl is sure that the amount of magnesia he has in his citrate of magnesia is sufficient to make a neutral salt; three equivalents of magnesia to one of acid.

MR. DIEHL.—I can't say that I am. When I made the calculation, I took the formula for carbonate of magnesia as given in the Dispensatory; consequently, if the carbonate of magnesia had contained more or less water than is given in that formula, it would differ. I suppose the citrate of magnesia is slightly more acid than when prepared the other way, but it is a palatable and effective preparation.

PROF. EBERT.—The only way I prepare the solution of citrate of magnesia (and I have a very large sale for it) is to follow out the Pharmacopœia and make it every day or two. I can't keep citrate of magnesia more than two or three days at the utmost. When it is three days old it begins to precipitate, if I follow the formula to the letter. At the time it is made I don't add the bicarbonate of potassa, but wait until the customer calls for it, when I weigh off the forty grains of bicarbonate, throw the crystals into the bottle and tie the cork down. It takes but a moment and the customer gets it fresh. I have an immense sale for citrate of magnesia; customers call from all sections of the city because they get it fresh by waiting a moment while I put the bicarbonate in.

MR. SARGENT.—My experience coroborates the statement of Mr. Ebert. I believe every druggist would make money by following (letting alone the principle of the thing), the Pharmacopœia in making citrate of magnesia. I know it operates that way with me. Customers will come a mile to my store to get it, because they say they do not get the same article elsewhere. I think it pays me very well to be honest in this manner.

THE PRESIDENT.—I made it the same way years ago and persons were very well satisfied. My successor continued to make it in the same way, preparing the solution, and afterwards putting the bicarbonate of potassa in

when it is needed. The solution keeps for weeks without the bicarbonate of potassa.

PROF. EBERT.—My experience is not that it keeps many weeks, but it keeps much longer.

THE SECRETARY.—I would like to ask Mr. Ebert whether he knows that his magnesia is really perfectly calcined. Using fresh calcined magnesia, which contains no water of hydration and is free from carbonic acid, you will find by following the directions of the Pharmacopœia, using the whole amount of citric acid, that the magnesia can scarcely be dissolved in it before the salt will commence to precipitate. Fortunately, the calcined magnesia of the market always contains more or less water of hydration, and more or less carbonic acid; and that is the reason why if the formula of the Pharmacopœia is followed, the solution will keep for a few days without precipitating.

MR. DIEHL —Our friend Sargent said that he believed in being honest in regard to making citrate of magnesia. I would like to ask whether it is a great saving to use carbonate instead of calcined provided you use the citric acid in the same quantity?

MR. SARGENT.—I find no fault with using carbonate.

MR. DIEHL.—There is no disposition on the part of those who use carbonate of magnesia to economize. It seems to me the formula for citrate of magnesia containing a slight amount of acid in excess is preferable to that of the Pharmacopœia. We attain that end by making the calculation as I have said, and our citrate keeps in cool weather for a month if properly corked. It is just as good at the end of the month as the day it was made.

MR. ELLIS then related his experience, and described the method he followed in making citrate of magnesia on a large scale.

A paper was read by Mr. W. J. M. Gordon, on the Stability of Liquid Preparations made with Glycerin. The essay was in answer to Query 41.

PROF. PARRISH.—It has occurred to me, and has been mentioned to me by others, that the therapeutic effects of some medicines are considerably modified by the use of glycerin. Glycerin being such an excellent solvent, and eagerly absorbing moisture from mucous surfaces, it seems different from saccharine, and especially different from alcoholic solutions. Our friend Brady tells me that solutions in glycerin are practically found in the case of astringents to be much less active than solutions in water. Solutions of tannic acid in glycerin have been much less active than solutions of tannic acid in water. It is not calculated to be readily absorbed.

The Secretary read the synopsis of his paper on African Saffron, in answer to Query 27, and exhibited three samples of the commercial article.

Mr. Sheppard's paper on the Preparation of Medicated Waters, in answer to Query 30, was read by Professor Markoe.

Mr. Markoe.—I will state, in addition to the information given by Mr. Sheppard, the kind of silica he used. I examined it microscopically, and it was nothing more than diatomacious earth; immense deposits of which are found in various parts of the country. The form of silex used in the British Pharmacopœia was officinal, under the name of silex contractus, and made by heating silex to a high degree of heat, then plunging it into cold water, and powdering it.

The Secretary.—It may be that medicated waters made from essential oils will answer the purpose, but they cannot compare with the medicated water distilled from the drugs. Cinnamon water made from the oil tastes and smells like cinnamon, but has a burning taste; while cinnamon water, distilled from cinnamon, is sweet, as if it contained sugar. Similar differences will be noticed in all the waters made from the oils, and distilled from the drugs.

A paper on Aromatic Sulphuric Acid, was read by Mr. Doliber, in answer to Query 29, and referred.

The report of the Committee on the Time and Place of the next Annual Meeting, was called up by the Business Committee.

Mr. Dalrymple.—It has been suggested that the time be August, instead of September. For many of our members it would probably be more convenient. I only throw out the suggestion; I don't offer any amendment.

Prof. Procter.—I don't wish to occupy more than a few moments, but I wish to say that several members, in looking to a settlement of this question, have thought the next meeting would be somewhere in the Southern States; probably Richmond, Va. It is desirable that the members generally should, in as brief a manner as possible, express their opinion. Let us have the general sentiment. I have no wish to go where the majority do not care to go.

Mr. Gordon.—The committee canvassed that matter, and we came to the conclusion that the time had not arrived for holding a meeting South; perhaps, by another year, the time might be more suitable. It was a question whether the next meeting should not be held farther north; Cleveland, or as some thought, Niagara Falls. The committee are not particularly tenacious in regard to it.

Mr. Sargent.—If it will not take up too much of the time of the meeting this afternoon, I should like to have the facts which were presented at the last meeting in relation to the membership of the Association, showing that the place of meeting has very much to do with the acquisition of membership, and also showing that the proportion in the Southern States is very small; in most of the Southern States scarcely any representation at all.

Mr. Gordon.—There is a fact in relation to that, which is that the population is much smaller. The towns down South are not so numerous nor

so large. We considered that in taking the State of Ohio. There is a dense population, and there seems to be little interest in that State in pharmacy. We thought a meeting in Cleveland might stir them up.

Prof. Ebert.—I am in favor of going South, though not during the hot weather. I certainly think it would be very desirable for this Association to meet there, and stir up a greater interest in pharmacy.

Mr. Diehl.—I, contrary to Mr. Ebert, am in favor of going North, and I confess I am not altogether disinterested in the reason. I should like to invite the Association, on behalf of the druggists of Louisville, to meet there in 1873. For that reason I desire them to meet North the coming year.

The Secretary.—Mr. Sargent has called for the statement. The President, in his annual address last year, said:

"Wherever our meetings have been held, a large increase in our membership from that section of country has been the result. To illustrate the effect of this, we find that we have in Philadelphia 114 members, in New York City 94, in Boston 65, in Chicago 60, in Cincinnati 38, and in Baltimore 46 members. This is the most Southern city yet visited by us, with the exception of Washington, near by. From our roll of members, it appears that we have only 45 members in the 13 Southern States, of whom 14 reside in the city of Louisville, Ky. This number is so disproportionate to the number of accomplished pharmacists in the Southern half of our country as to awaken inquiry for the reason. When we allow the full influence of the war, and the difficulty of maintaining intercourse for ten years past, and the great interruption of business in that section, even then the fact is not explained. Something is needed to bring our Association before the many there who are known to feel a lively interest in the progress of pharmacy, and thus secure their co-operation, and convey to them the benefits.

"What has been done by our meetings in Northern cities may be just as practically accomplished in the South, if our sessions are held occasionally there. This is precisely in the line of our efforts, for our objects are National, and our membership is designed to represent every section and state. In order to gain this result, let our meetings be hereafter fairly distributed with regard to our aims, rather than our invitations to hospitality."

Mr. Sargent.—In addition to that argument this Association has been accused of being sectional, and that assuredly is not a desirable reputation for this Association to have.

Mr. Rice.—I move the report be adopted. Cleveland is a beautiful city, and is accessible and convenient to the Eastern men. It is also accessible to Western men. It has excellent hotel facilities, and is pleasant to visit in.

Prof. Ebert.—The gentleman who has just spoken must remember that we do not come altogether for a pleasant time. We ought to come together for some other object than a pleasant visit, which may be nice and proper to take along; we ought to have in view the purpose of fostering pharmacy, and if we can attain that object by going South, if we can raise the standard of pharmacy and create an interest in pharmacy there, I say go South,

whether we have to meet unpleasantness or not. Let us go where we can do the most good, and let us attend to business while we are there, and not to pleasure, as we often do when we go to fine cities.

MR. DALRYMPLE.—I had considerable conversation with Mr. Ash, from Mississippi. He was suddenly called away from this meeting by some painful intelligence from his family. I asked him if he could suggest a place in the South where we could meet, and he said he could not, except Louisville. I understand our friends in Louisville are not quite ready; they will be ready for us in 1873, and therefore I am in favor of going to Cleveland.

THE SECRETARY.—About ten years ago the Association had quite a number of members in the states of Virginia, and North and South Carolina. Most of those members have dropped off since the war; some may be dead. I have not the slightest doubt if we meet in a Southern city accessible to them, we shall gain considerably in membership and create an interest in the progress of pharmacy. Undoubtedly it is much needed there. I remember in 1859 or '60 we received an invitation to meet at Columbia, South Carolina; at that time it was considered to be too far South.

MR. BROWN.—We ought to go where we can do the most good, and judging from an article read to-day in regard to citrate of magnesia, I think this Association ought to adjourn to meet in Chicago.

MR. BEDFORD.—Aside from the laughable part of the magnesia business, I think Cleveland is desirable from another point of view. I have had a correspondence with Mr. Gaylord in regard to pharmaceutical matters, wherein he spoke of the low state of pharmacy in Ohio; and I judge we can do as great good by going there as in any other part of the country.

PROF. PROCTER.—Would there be a member there for a local secretary?

MR. TUFTS.—One gentleman who joined last year, Mr. Gaylord, is the only member we have there; he has never attended our meetings.

MR. BROWN.—I understand the question to be the selection of a place for the next meeting?

THE PRESIDENT.—Yes, sir, any place can be suggested.

MR. BROWN.—I would amend by making it Pittsburg.

PROF. PARRISH.—I know at Pittsburg we should have a hearty welcome, and I feel assured that a meeting of the Association at Pittsburg would do as much good as in any location we could select. On our way here a portion of the delegation from Philadelphia, New York, and Boston stopped at Pittsburg. The druggists of the place knew of our coming and gave us a reception. They had carriages in waiting, and carried the party all over the city and suburbs. We staid there through the evening, and were present when they resolved to form a pharmaceutical association of Allegheny County. It was then spoken of as a probable result, that the Association would shortly meet there. I should think Pittsburg a better place than Cleveland myself.

PROF. EBERT.—I hope we will go to Cleveland, because there is only one member there and we will not have carriages.

THE SECRETARY.—The Association has now met for nineteen years continually in Eastern and Western cities, north of Washington. I think we should go South, and in order to test the sense of the meeting I would move to amend, by substituting the city of Richmond, Va.

The question being taken on the amendment to meet in Richmond, Va., a division was called for, 18 members voting in the affirmative and 27 in the negative; so the amendment was lost.

MR. TUFTS.—I would inquire if we have not an invitation from Washington, received by Mr. Crawford, I think, and handed to Mr. Maisch. Washington is a Southern city and we have active pharmacists there.

PROF. EBERT.—They have just formed a Pharmaceutical Association in Washington, and it would help Pharmacy if we were to go there.

The Secretary read a letter from the Columbia Pharmaceutical Association, inviting this Association to meet in Washington next year.

MR. GORDON.—It seems to me it would be too soon to meet in Washington after meeting so recently in Baltimore; it being only thirty miles distant. Baltimore is a southern city and accessible to everybody in that vicinity. If they had an interest in Pharmacy they would have attended the meeting there. I would like to meet South, but in canvassing the matter, I felt it was scarcely time, particularly when the towns are so far apart.

MR. TUFTS.—The reason I voted against Richmond was this; we have but two members there; young members, who joined only last year, who have not been present at our meeting, and I think it is absolutely necessary for the success of the meeting to have an efficient local secretary to prepare for the meeting.

MR. BROWN.—It strikes me there are but two places the Association should adjourn to,—Cleveland or Pittsburg. It seems to many to be desirable to go there to create an interest in Pharmacy throughout the northern part of Ohio. It must be evident when the Association adjourns to large cities that very few druggists outside of the city take any interest in it, and it is by going to Cleveland, that the neighboring druggists will be interested in the success of the Association.

MR. DALRYMPLE.—I would like to say one word in favor of Pittsburg. I had the pleasure of being with our friends that received such a warm reception there, and we found matters of great interest to druggists: the manufacture of glassware, iron, steel, &c. We found that about one-half of the vials used in the drug trade were manufactured in Pittsburg, and it would be a matter of great interest to our members to meet there.

PROF. PROCTER.—The city of Portland has a new Association that needs nursing, and if we were to go there we should do a great deal of good.

MR. REMINGTON.—I think the remarks of our Treasurer are about as sensible as any we have heard lately. It is important that we should have

a good local secretary, and a number of live pharmacists who know something about the meetings and how the meetings are gotten up. Pittsburg has several men who belong to this Association; Cleveland has but one, and I think we ought to go to Pittsburg.

PROF. MARKOE.—I would like to say one word in favor of Maine. They are making a gallant effort to organize a School of Pharmacy and we should receive a warm welcome from the pharmacists there. I move to amend by substituting Portland, Me.

MR. GORDON.—For several years Pittsburg has not been represented at the meetings of this Association, and never since the decease of Mr. Wyman, whom the older members will remember. Never since his time has there been any interest manifested in this Association. Although I am not opposed to going there, I think we can do as much good by going to Cleveland. There is no more accessible point, and it is a pleasant place at the time our meeting would be held there.

MR. SAUNDERS.—The Cleveland people are very warmhearted, and if we have but one member it will not be long before we shall have many friends.

MR. GORDON —Buffalo is near there, and we need to have something done there.

MR. TUFTS.—Mr. Fish charged me some two years ago, whenever opportunity occurred, to invite the Association to meet at Saratoga. There would be every accommodation there. It would be at a time when the hotels would not be crowded, and Mr. Fish will do all that is necessary to make us very comfortable. It is easy of access, and I think we could add much to our membership by going to that point.

MR. PARHAM moved to amend by substituting Leavenworth.

The amendment to meet at Leavenworth was decided in the negative; also the one to meet at Portland, Me., when the vote was taken on the amendment to meet at Pittsburg, the vote stood 22 in favor and 27 against it, so this amendment was likewise lost. The amendment to substitute Saratoga being negatived, the question was taken on the orignal motion, and the Association decided to meet next year at Cleveland, Ohio.

An amendment to substitute the second in place of the first Tuesday of September, 1872, was lost, and the original motion carried.

The Executive Committee presented the application for membership of the following gentlemen:

P. H. Heller, Washington, D. C.	Amos R. Blake, St. Louis, Mo.
William R. Fenner, Rome, Ga.	George F. Blickhahn, M.D., "
Adolphus Mueller, Highland, Ill.	James F. Connor, "
A. J. Bristol, Indianapolis, Ind.	Otto D'Amour, "
James W. Dryer, "	William R. Grant, "

Messrs. Ebert and Crawford acting as tellers reported the unanimous election of the candidates.

Mr. E. Mallinckrodt declining to serve as Chairman of the Committee on Adulterations, the vacancy was referred to the Nominating Committee for consideration and report.

After the exhibition, by Professor Markoe, of a convenient portable microscope, the Association adjourned to meet to-morrow morning at 8 o'clock.

Sixth Session.—Friday Morning, September 15th.

President Sander called the meeting to order. The Secretary read the minutes of the Fifth Session, which were approved.

The Secretary laid before the meeting the Report of the Progress of Pharmacy, received this morning from San Francisco. A letter of Mr. Wenzell was likewise read, explaining the causes that prevented him from finishing the report in time for the present meeting. In compliance with the Chairman's request, the report was, on motion, directed to be returned to him, and leave granted to finish it within one month.

The Committee on Papers and Queries reported the continuation, for another year, of the queries numbered in last year's list as follows: 4, 5, 6, 7, 8, 12, 14, 17, 18, 19, 21, 32, 33, 35, 39, and 42. They also recommend that Queries 25, on the medicinal articles in use by the Indians, left for general acceptance; No. 26, on Cantharidin, accepted by Mr. A. E. Ebert, and No. 40, on the amount of Acetic Acid in Extract of Colchicum, accepted by Mr. E. C. Jones, be dropped; also that No. 28, on Nitrous Ether, be referred to Mr. P. W. Bedford, and No. 34, on Gelseminia and Gelseminic Acid, to Prof. Wormley, of Columbus, Ohio.

The recommendations were concurred in.

Mr. Joseph L. Lemberger read a paper on Wild Cherry Bark, in answer to Query 43, and exhibited forty-eight samples of the bark, in pieces and in powder, collected by him at different periods during the year.

Professor Procter read a volunteer paper by Dr. Squibb, on Pareira Brava, which was accepted and referred; specimens of the root and stem, as met with in commerce, were exhibited in illustration of the subject.

THE SECRETARY.—I am very glad to learn that the root of pareira has ever been in the market, and that the lower portion of the stem came only gradually to be substituted for the root. If I may trust to memory, the first, and probably the only writer on materia medica who called attention to that fact, some twenty years ago, was Prof. Schleiden, of Jena. He positively stated that what was bought in the market as pareira was usually the stem, only occasionally mixed with pieces of the root. So far as I am concerned, I have never met with the root, but have always seen the stem only.

The Business Committee announced the following proposition of an amendment to the By-laws, to be considered and acted on at the first session of the next annual meeting:

"There shall be elected at each annual meeting an Executive Committee, consisting of fifteen members, who shall transact all necessary business of the Association, including the election of members, and shall report all such transactions to the Association for approval at each meeting. The By-laws providing for the standing committees, now known as the Executive and Business Committees, shall be dropped, together with all the provisions relating to said committees."

This has been drafted in haste, but is intended as the spirit of the amendment desired, and is sufficiently comprehensive to cover the proposed action at the next meeting.

PROF. PARRISH.—The By-laws may be altered from one session to the other. We had talked the matter over, but I did not know the Business Committee had taken it in hand. I will read it as it occurred to my mind:

Resolved, That a committee be appointed to consider and report next year upon the expediency of forming a Board of Direction, to be made up of the Business Committee, the Committee on Papers and Queries, and the Executive Committee, who shall meet simultaneously with the meetings of this Association, and shall transact the business which now occupies so much of our time.

I had not quite finished the resolution. Would not that be a better way than attempting now to forestall the action at the next meeting, as it could then be digested during the entire year? The British Pharmaceutical Conference will furnish a very excellent example in its method, and I think if we proceed intelligently with their laws before us, the committee could readily make us a very good rule. It would be such an immense improvement that it would be worth while to take time for it.

PROF. EBERT.—I would suggest that it would be much better to have the officers of the Society, namely, the President, Vice-Presidents, Treasurer,

and Secretary, form this council, together with the Chairmen of the Business, Query, and Executive, and perhaps of the other standing committees. They ought to be the managers of the Association.

PROF. PARRISH.—The Permanent and Local Secretaries are ex-officio members of these committees. The President is, by virtue of his office, a member of all committees. It used to be so considered, and I think it is now, whether it is in the Constitution or not.

MR. SARGENT.—The Business Committee suggest the mere filing of the proposed amendment. It is sufficient to cover these points; so the spirit of the amendment is all that is necessary.

PROF. PARRISH.—I don't think we need to propose it in advance. All we have to do to alter the By-laws, is to propose it at one session and vote on it at the next.

PROF. EBERT.—It is proposed at this meeting, so it can be brought up at the first session the next meeting.

THE PRESIDENT.—The resolution lies on the table until the next meeting.

Professor Prescott read a paper on Sulphophenic Acid and its Salts, which was accepted, and referred for publication.

The following papers were read by their titles, and referred to the Executive Committee: On the Preparation of Syrups without heat, by L. Orynski; Pharmaceutical Notes, by George C. Close; the Drug Business, its Relation to Medication and Pharmacy, by Daniel C. Robbins; Artificial Mineral Waters, by Augustus Theodore Moith.

A communication from Mr. Adolph Mueller, of Highland, Ill., relative to the use in prescriptions, by some physicians, of Secret Characters, was likewise referred to the Executive Committee.

Prof. Procter, on behalf of the Committee on the General Index, made the following additional report:

The Committee on the Index further report, that in view of the great amount of labor and time cheerfully *given* by Mr. Wiegand to the Association in the preparation of the General Index, some substantial acknowledgment be presented to that gentleman, with the sincere thanks of this Association for his disinterested labors, and that the Treasurer be authorized to pay to Mr. Wiegand one hundred dollars.

Mr. Doliber read Mr. Rittenhouse's answer to Query 36, on Fluid Extract of Senega; and a volunteer paper, by Dr. Squibb, on the same subject, was read by Professor Procter. Both papers were referred for publication.

PROF. PROCTER.—My own opinion is, that by the use of ammonia the effervescence which takes place when a bicarbonate is used, will be avoided; the suggestion of the ammonia is undoubtedly a way of getting over the difficulty.

THE SECRETARY.—My experience with fluid extract of senega, when making it eight years ago on a very large scale at the United States Army Laboratory, in Philadelphia, was precisely the same. I had to use an alkali in order to avoid gelatinization.

MR. DIEHL.—If ammonia will answer the purpose, it must be much better and much preferable to a non-volatile alkali, because any excess used will pass off again, as Mr. Procter suggests.

PROF. PARRISH.—I would ask whether the ammonia is added previous to the cessation of the heat?

PROF. PROCTER.—There is no heat in the process. I did not read the latter part of the paper, to save time. There are a great many figures in it, and when it is in print we can read it to advantage.

PROF. PARRISH.—I was afraid it would be flavored with ammonia.

PROF. PROCTER.—Not at all. The quantity is very small, probably very little more than enough to saturate the acid of the senega. A year's experience has proved it answers the purpose. Of the alkalies, I have tried liquor potassæ and bicarbonate of potassa, the former answering quite as well as anything I have used.

MR. DIEHL.—I would ask Mr. Procter whether the amount of heat necessary in evaporating a tincture of senega would affect the preparation materially, in the opinion of the writer of that paper?

PROF. PROCTER.—No heat is used in his formula. It is a case of repercolation, and appears to exhaust without evaporation.

MR. DIEHL.—I would like to make a remark on the subject of heat in relation to fluid extracts. It seems to me the injurious effect of heat upon these preparations is considerably exaggerated. My attention was especially drawn to senna in a recent paper by some French chemists, who have attained according to their paper identical results with Dragendorff and Kubly, by boiling senna. It will be recollected that the latter lay particular stress upon not heating the solution of senna in the preparation of cathartic acid.

A volunteer report, by Mr. William Saunders, on the Solid Alcoholic Extracts of the United States Pharmacopœia, was presented by that member; and, after having been read, referred for publication.

Mr. Remington read an answer to Query 24, on the Purity of Tartar Emetic; and Professor Markoe one by Dr. Garrigues, to Query 38, on Plants Useful as Insecticides.

PROF. MARKOE.—I have made experiments with the oxeye-daisy and found it to utterly fail after drying.

MR. BRADY.—We have greater faith in pyrethrum roseum than in any other species. That species is used on the shores of the Mediterranean, where vermin are very plenty.

PROF. MARKOE.—It may not be known that the pyrethrum roseum is a hardy plant which can be easily cultivated. A number of years ago, seeds of this plant were placed at the disposal of Professor Gray, of Harvard College, and planted in the Cambridge botanical grounds, where the plant flourished very finely. Its appearance is like the China Aster. Mr. Hovey of the Massachusetts Horticultural Society has succeeded in producing a double variety of it, and by careful cultivation, also several shades varying from white to a deep rose color. Whether by cultivation it could be made to compete with the foreign importation is a question to be determined.

THE SECRETARY.—I should like to ask whether the pyrethrum roseum produces fruit in New England.

PROF. MARKOE.—It matures in the Cambridge garden, and is very easily propagated by shoots. There is an extensive bed of it there, without having any care bestowed upon it.

Professor Procter read Dr. Squibb's volunteer paper on Extract of Jalap, which was accepted and referred.

PROF. PROCTER.—It has occurred to me that this difficulty of the collapse of the particles might possibly be overcome by breaking the jalap into small pieces, and macerating them for a short time in cold water, to extract the large quantity of uncrystallizable sugar to which it seems to be due. If this was taken out by reducing the jalap to pieces the size of a marble, and then drying and powdering and extracting with alcohol, I think it would overcome this difficulty, but might lead to an ununiform product, from the different amount of soluble matter taken out.

THE SECRETARY.—Dr. Squibb is entirely correct that the aqueous extract ought to be rejected. You will find in some works on materia medica the statement that the aqueous extract of jalap acts as a mild diuretic and laxative. I had some aqueous extract prepared after the jalap had been exhausted by alcohol, and some prepared from the alcoholic extract. The former was entirely worthless, had no action at all, while the aqueous extract obtained from the alcoholic extract of jalap proved in the hands of Dr. Da Costa, of Philadelphia, and two or three other physicians, to possess some diuretic and mild laxative properties, and Dr. Da Costa at one time suggested it might be a very excellent laxative for children. The erroneous idea of preserving the aqueous extract undoubtedly arose from mistaking the two; that is, the aqueous extract obtained after the jalap has been exhausted by alcohol, and the aqueous extract which is obtained by precipitating the resin of jalap.

Professor Curtman, of the Missouri Medical College, obtained

the floor, to make some explanation in regard to a pharmaceutical still on exhibition at this meeting.

PROF. CURTMAN.—I rise for the purpose of calling your attention to an imposture perpetrated on the Association, and on the profession at large, by the exhibition by Mr. Mitchell, of Chicago, of a still, connected with a coal oil stove. In his circular (which, by the way, is copied *verbatim et literatim* from an article I published several years ago in a St. Louis journal, and which Mr. Procter did me the kindness to reprint in the American Journal of Pharmacy), a patent is claimed on this still, of which I will give you the history. In 1865, shortly after the close of the war, an esteemed friend of mine, from Philadelphia, settled in Memphis, and opened a prescription store. For the purpose of preparing his own fluid extracts, &c., he started a pharmaceutical laboratory, for the apparatus for which he consulted me. We procured from Mr. Parrish one of Prof. Procter's well-known stills. The peculiar work that was at that time to be done suggested to me that the capital of that still might be modified for the purpose of concentrating at once the alcohol from dilute solutions; and, on the other hand, for fractioning and separating alcohol from ether or water, ethereal oils from water, &c.; so I adopted, in place of Mr. Procter's capital, the well-known separator with Liebig's condenser, and added that as a capital to the still. It appeared to work well, and I afterwards had models made; and during my lectures at the Missouri Medical College here in 1866, supplied a number of students with the stills, which were made in the city here. Some time after, I published an article, as I stated, in the St. Louis Medical Record; and in 1869, in July, Mr. Procter did me the honor to reprint that article in the American Journal of Pharmacy, with the illustrations. The still up-stairs is an exact reproduction of it, and the circular there is *verbatim et literatim* a reproduction of that article that then appeared, leaving out only Mr. Procter's name, and inserting the name of the claimant of the patent. I have here the journal in question, together with the circular, and any gentleman that wishes to compare notes can very readily do so.

PROF. PARRISH.—Is the patent which this gentleman claims for the still or for the combination?

PROF. CURTMAN.—He claims in the circular to have received a patent for the still in 1869, and cautions against the use of that still, for which he charges ten dollars, and which has been made here for from three to four dollars, according to the strength of the material. He claims a patent for it, which I have no doubt he does not possess, because it could only be obtained by ways that I don't think anybody would resort to; but he blackmails the pharmacists who use the still out of the difference between three and ten dollars.

THE PRESIDENT.—If he has a patent, he must have the apparatus stamped with the date of the patent.

PROF. CURTMAN.—There is no such stamp.

PROF. EBERT.—To the best of my recollection the gentleman does not claim a patent on the still.

PROF. PARRISH.—He says stoves and stills.

PROF. EBERT.—It is only in relation to the application of the stove and still.

PROF. PROCTER.—It is proper to further state that an accurate model of this still was sent by me previous to the meeting in Chicago, and was exhibited there.

THE PRESIDENT.—When I was up-stairs I thought it was Dr. Curtman who exhibited it.

PROF. PARRISH.—I recognized it at once as the same still. We have the one that was exhibited, I think, in the college at Philadelphia. I supposed the merit claimed by this gentleman was in the application of kerosene in such a way as to generate sufficient heat to use the still.

DR. CURTMAN.—It is claimed that the still is his discovery, and the circular here is an exact reprint, even to the introductory remarks, of the articles that appeared in the journals.

PROF. PARRISH.—I am glad the Doctor has mentioned it. It is certainly a subject worthy of our condemnation. The application of heat in that way, by kerosene, strikes me, from what little experience I have had with one of those machines, to be a pretty good one, since kerosene is so difficult to use and so very cheap and accessible.

PROF. EBERT.—I can say that the exhibitor has no patent on anything else except the application, not on that still, nor anything else connected with the apparatus here; this circular is rather a misconstruction, I think, of what the gentleman claims. He has no patent on the still, because he uses Prof. Procter's capital.

DR. CURTMAN.—The circular reads thus:

CAUTION.

Certain unprincipled persons having satisfied themselves that our stoves and stills are a valuable addition to the laboratory, are offering to the druggists of the Northwest a stove and still, the principles of which are mine, and secured to me by letters-patent 1867, 1870, and 1871.

THE SECRETARY.—If he does not claim any right to the still, the circular is evidently worded so as to mislead.

PROF. EBERT.—There is a controversy in Chicago in regard to those stoves, and the application of the stove to the still. There is another party in Chicago who is getting up a stove similar to his, and that is why this circular was issued. He does not claim any patent on the still, because it did not originate with him.

MR. SHAFER.—From corresponding with Mr. Mitchell, I think I can affirm Mr. Ebert's statement. I think Mr. Mitchell does not claim any patent for the still. It is a misprint or oversight in his circular. He means stove.

Dr. Curtman.—If that really was the intention and only a misprint in one of the circulars, it is very strange that there is a misprint in the explanatory one. He prints here the introductory remarks word for word. In the article that was published in the American Journal of Pharmacy, it states: "Much has been accomplished in the construction of a still, at once cheap and simple and easily manipulated, by Professor Procter, of Philadelphia, whose excellent apparatus deserves a much wider distribution than it has yet obtained." Mitchell, in his circular, makes it read, "much has been accomplished in the construction of a still at once cheap and simple, and easily manipulated. Such an apparatus is now manufactured and sold by R. B. Mitchell, 45 Winchester Avenue, Chicago, Ill., in connection with his druggists' stove, whose excellent apparatus deserves a very wide distribution."

The Business Committee presented the following resolution offered by Professor Parrish, which was agreed to.

Resolved, That the Business Committee be requested to consider the expediency of a Board of Direction, which shall meet simultaneously with the Association, and shall transact all its business, including the election of members, subject to the approval of the Association; the proposed Board of Direction to be composed of the officers of the Association, the Business Committee, the Committee on Papers and Queries, and the Executive Committee, the committee to report at the first session of the next meeting of this Association.

Professor Parrish likewise offered the following:

Resolved, That in the compilation of the volume of Proceedings, the Executive Committee be requested to omit such portions of the phonographic report as pertain merely to current business, and hence are not of general interest nor of scientific importance.

The Secretary.—Does this resolution mean that the phonographic report has been heretofore published too much in extenso? I remember a number of years ago it was remarked that we ought to print every word that was said here, because it would make people more careful about what they did say; and I think the publication of the phonographic report to such an extent as has been done, has had that effect. I would state, however, that the phonographic report was never published in extenso, that is, in the way it was furnished to the Executive Committee by Mr. Slade, but that what appeared to be utterly unnecessary, and evident mistakes or errors, were always left out, the Executive Committee approving of the opinion of the editor. These minor discussions are very frequently of considerable interest to members who are not present, for instance, to explain why certain resolutions were passed. I can without any direct action on it curtail the report still more, but it seems to me that a good deal of matter of interest to members who are not present at the meetings, will be lost in that way. I have had many letters from members who were not able to attend, speaking approvingly of the extended publication of the report.

MR. SARGENT.—As I understand the intent of the resolution, it is not to censure the past course, but simply to give authority to expunge such matter as is certainly not of general interest, rather than to direct them what to do.

THE PRESIDENT.—It has been heretofore left to the discretion of the committee to cut out whatever they thought unworthy of publication. By this resolution, they are authorized to do this. The resolution authorizes the Executive Committee to cut out everything that is not of interest.

MR. SARGENT.—The instruction which has been rather implied than direct, has been that all remarks should be published exactly as they are spoken.

PROF. PARRISH.—I think Mr. Maisch's remarks exceedingly just in regard to the effect it has had in cutting down remarks; yet all of us who read the Proceedings, for instance, those of last year in regard to the efforts to make both ends meet, will agree that there are some matters which might as well be left out. I don't mention it as having been wrong to publish them, but I think when we send this volume all over the world to foreign countries, for it has grown to be a volume of scientific interest, that it had better be a little more cut down. It makes less expense to print, and there will be less postage on it. If you compare it with the British Pharmaceutical Report you will see what is meant. There the business matters are very much suppressed, and the character of a scientific publication is more maintained.

THE SECRETARY.—The illustration given by Mr. Parrish is just the very argument justifying the publication of such remarks. You may rest assured that my friend Tufts and myself should have had a good many more letters to write about the increase of the dues from $3 to $5 than we had, but by referring members to the discussion at the meeting as published in the Proceedings it saved us the trouble and explained it a great deal better than we could have done. Is not that so?

MR. TUFTS.—That is so; I refer to it in my report.

PROF. PARRISH.—I see a point there which I never saw before.

The resolution was not agreed to.

The Nominating Committee presented the following report:

The Committee on Nominations report the name of Justin Steer, of St. Louis, Mo., as Chairman of the Committee on Adulterations, &c., in place of Mr. Mallinckrodt, who desires to withdraw. They also report the name of Henry C. Gaylord, of Cleveland, Ohio, for Local Secretary, and in case Mr. Gaylord should not be able to serve, they recommend that the Executive Committee be empowered to make all necessary arrangements for the meeting at that place.

On motion, the report was accepted, and the President requested to deposit an affirmative ballot for both nominees, whose

election was reported by Professor Procter, acting as teller. The recommendation attached to the report of the Nominating Committee was then, on motion, unanimously agreed to.

Professor Procter read by their titles, and in a few remarks called attention to the interest attached to two volunteer papers by Dr. Squibb, on Bicarbonate of Soda and on Rhubarb.

A volunteer paper on the Preservation of Herbs, written by Mr. Joseph Harrop, and accompanied by quite a number of specimens, was read by Professor Ebert.

Mr. Saunders.—That is an important subject. Most of the herbs put up in compressed packages are not fit for use. They are generally full of stalks, and I have found pieces of foreign matter in them that were never attached to the plant; but the chief objection is that they are improperly preserved, or contain too large a proportion of the inert portion of the plant. I think the great difficulty might be got over if the druggist would buy them in bulk. We have adopted this plan, and found it to work very much better than the old manner of buying in packages. If you buy them in packages you sell them as you get them, and you don't know what you are selling. The natural argument in favor of that is, that it is more convenient, but I don't think that should weigh with the druggist who cares what he sells.

The President.—There are herbs exhibited up-stairs finely dried, and of a kind as they ought to be sold. I believe they are too high. The wholesaler could not buy them; they would be only for the retail trade.

Prof. Ebert.—I agree with Mr. Saunders in regard to these herbs, but it has become so customary to purchase and sell herbs in packages that it would be only a very few that would accept the proposition. I think the suggestion thrown out by the writer of this paper, of demanding that the party who puts up the herb shall put on the date, would be the best manner of giving us some idea how old they are. It is very true they can be rewrapped, but it will be only one fraud committed by the one who puts it up, because the wholesale druggist or retailer would not have the wrapper, and they would sell in the original package. I think the date is a very good suggestion, and I hope it will be carried out.

Mr. Harrop.—I beg to differ about purchasing in bulk. You could, with as much reason, say that quinine might be sold in pound packages, as I have heard it used to be, as put up in ounce bottles. I think they should be put up in such a way as to show the progress of pharmacy in the country, and as there is not one perhaps of those herbs in a hundred that is kept by any druggist that is sold loose, I think the best thing is to regulate the way of putting them up. We all know that sage, for instance, when kept in a barrel loosely, gets full of dust, and is worse than nothing. I think myself that the question needs some consideration, and that is why I brought it up. I have thought of it for a number of years.

PROF. MARKOE.—It goes back to the question of commercial honesty, and say what you may, we have got to rely upon the honesty of the dealer. In Boston there are several of the dealers in herbs who, if we want to be assured, are quite willing to press them in presence of the purchasers. I think that might be done in other cities. It takes but a few minutes to press many pounds of herbs. The druggists are willing to press anything you want, and you can see the work done.

MR. SAUNDERS.—Unfortunately we do not all live in Boston, and it would take a long time to go to Boston every time we want a few herbs pressed. I don't think the remarks of the writer of that paper upset my position. He seems to think that because it is a time-honored custom we should not set it aside. I think it is a rule that should be more honored in the breach than in the observance. There is no necessity of keeping them in barrels where the dust can get at them. They might be kept in bins, or in barrels and well covered.

PROF. PROCTER.—I will second that idea, presuming the discussion is in reference to the manner of keeping drugs. When I was an apprentice, in 1831, the custom was to use old tea boxes lined with lead, and label them with the names of the herbs in them. They answered an excellent purpose. The boys in those days could tell an herb when they saw it. I really believe that one reason why botany is so distasteful to the younger apothecaries of the present day is, they have not been led to see the importance of it in recognizing drugs, in consequence of the habit of chopping them up in such a manner that they cannot be recognized.

THE SECRETARY.—I am glad that subject has been brought up for discussion. I like the sentiments and views that have been expressed by Prof. Procter and Mr. Saunders. Those who have to examine young pharmacists coming forward for graduation, realize how little these young men do know about herbs, and how important it would be to keep the herbs loose rather than in packages. When herbs are kept in packages, no matter how neatly, or how perfect the leaves may have been preserved, the apprentices do not become accustomed to examining them, and they rely on the labels in selling them. It is really astonishing how few, comparatively speaking, of the apprentices really do know the most common herbs. I have examined candidates for graduation who did not know sage from belladonna. Such, of course, would never get my vote for graduating. It seems to me that apothecaries are liable to get into slovenly habits by keeping their herbs in that way. A very good way for keeping them on a small scale is to convert old castor-oil cans into suitable receptacles, by having the cover made movable, so as to fall back and close the top well. Whatever quantities may be needed can be kept perfect in such cans for a considerable length of time, and no dust will get in. The advantage to an apprentice is, that in handling such herbs, he must look at them, and thus become acquainted with them. I must confess it always afforded me satisfaction to handle my herbs in a loose condition. Some years ago I commenced to keep herbs as put up by Wilson, of Boston, which I believe to be the nicest of all package herbs

in this country. I discontinued their use, and even went so far as to open every package I had in the store. The Messrs. Wilson exhibit here a number of herbs in a loose state; compare them with those in packages, pressed by the same firm, and decide which are preferable, not taking mere convenience into consideration. I believe Mr. Procter is right when he says the habit into which apothecaries have got of keeping herbs in packages has a great deal to do with the want of entering into the study of botany, which is very essential to the apothecary.

Mr. Harrop.—I agree with the gentleman in that particular. Most of the members of the Association are from large cities, but we out in Kansas have not the chance they have. Gentlemen will remember in my article I gave three methods of preserving them. The first method was the very one these gentlemen have been arguing in favor of. The next was the suggestion to keep them in tin foil; and the third, that the date of their packing should be printed on the wrapper. Old and worthless herbs would then have to be rejected.

Prof. Parrish.—What has been said in regard to herbs applies largely to drugs generally. In examining the specimens exhibited by McKesson & Robbins the other day, I met with a number of members of the Association who had never seen some of the most common drugs. I will venture to say there are a large number of our members who have never manipulated with or seen jalap in any other condition than powder; the same remark applies to ipecac. They are actually not known to many druggists. Ought we not to institute in this Association some method of popularizing the drugs which are only found commonly in powders, and make all our members familiar with them? It seems to me if the Association had a large assortment of its own of the leading drugs, it would make a nice feature of the exhibition. The exhibition is put there principally by those who have something to sell, and very little gets into the exhibition on any other basis. If the Association would have a cabinet, got up by its own members, that would display the whole materia medica, it would be as instructive a thing as they could do.

The President.—I was informed that a resolution would be offered to request every member to prepare specimens of the indigenous drugs found in the neighborhood of his residence. I don't know why it has not been offered.

Mr. Sargent.—I would like to make one statement. It has frequently been said, when you touch a man's pocket, you touch him all over. In Chicago a case occurred, where a druggist, who sold a package of pressed herbs, put up by a wholesale house in New York City, was sued for five thousand dollars damages, because of its being the wrong herb. The package was put up by the wholesaler, and the retailer sold it as received, and had no opportunity of knowing what it was.

Mr. Judge.—There is a habit of buying up large quantities of these herbs when they are cheap; and in subsequent seasons, in packing the goods, they buy enough of the fresh article to leaven the lump, and give it the odor of

the fresh article. The articles are then mixed and packed, and three-fourths or seven-eighths of the package may be three or four years old. I have found this so frequently the case that I have abandoned the habit of buying packed herbs. I almost invariably buy them in a loose condition. I have discovered also, during the last three or four years, that the public have come to distrust packed herbs, and almost invariably they will give the preference to loose herbs. In purchasing hops, for instance, almost invariably purchasers will say, "I don't want packed hops; I prefer the loose," and it will be a fortunate thing if the general trade arrive at this conclusion. I believe we never can be certain we are getting a good article, unless we buy them in a loose state.

Mr. Diehl.—One remark in regard to the article mentioned by the gentleman who just spoke. I believe that hops will keep better packed than in a loose state, and that is, perhaps, the only exception I would make.

Prof. Procter.—Provided they have not been beaten before they were packed, as is done down East.

The Permanent Committee on the Pharmacopœia was appointed by the delegations of the incorporated Colleges, as follows;

From Massachusetts	College	of	Pharmacy, Prof. G. F. H. Markoe.
" New York	"	"	Mr. P. W. Bedford.
" Philadelphia	"	"	Mr. Alfred B. Taylor.
" Maryland	"	"	Prof. J. Faris Moore.
" Chicago	"	"	Prof. Albert E. Ebert.
" St. Louis	"	"	Mr. M. N. Alexander.

The Business Committee presented the following resolution:

Resolved, That the sincere thanks of this Association are eminently due, and are hereby tendered to the Public School Board of the City of St. Louis, for their kindness in placing at the disposal of this Association the building in which we have met; and that the Local Secretary at St. Louis be authorized to draw upon the Treasurer for any expense incurred in lighting and taking care of the hall.

The resolution was unanimously adopted.

Professor Parrish offered the following resolution, which was unanimously adopted, the question being taken by Mr. Tufts:

Resolved, That the warmest thanks of the members in attendance at the present meeting are due and are hereby tendered to the Pharmacists and Druggists of this city, and its citizens generally, for their cordial and generous hospitality; and that we join with them in their high hopes and aspirations for the growth and prosperity of the Mound City.

The following resolution, offered by the Business Committee, was likewise carried, Mr. Tufts taking the question:

Resolved, That to the Local Secretary and the various committees who have given so much of their time, and have gone to so much trouble to secure the comfort and promote the happiness of their guests, our warmest thanks are due.

Mr. Tufts offered the following, which was carried:

Resolved, That the thanks of the Association are tendered to the Press of St. Louis for their efforts to spread such portions of our proceedings before the public as possessed general interest.

Mr. Dalrymple, on behalf of the Executive Committee, reported the following applications for membership:

C. C. Howell, Aurora, Ill.
George Macdonald, Cairo, Ill.
Henry Steingoetter, Belleville, Ill.
Geo. W. C. Phillips, Jersey City, N.J.
Franklin Ottinger, Pittsburg, Pa.
Louis J. Merkel, Cleveland, O.

Mr. Alexander moved that Mr. Dalrymple be instructed to cast an affirmative ballot for the candidates. The motion was agreed to, and the candidates were elected.

A number of specimens on exhibition were presented to the St. Louis College of Pharmacy, in the name of Dr. T. P. Allen, Dr. Squibb, McKesson & Robbins, Herrings & Co., and Mr. Scheffer, and by Prof. Parrish, and Mr. Lemberger. The President returned thanks in behalf of the College.

Mr. Goodman having moved a reconsideration of the resolution selecting Cleveland as the place of the next meeting, the motion was declared out of order, the mover not having been present when the resolution was passed.

Mr. Rice.—As one who voted in the affirmative on the resolution fixing Cleveland as the place of the next meeting, I move that that vote be reconsidered.

The Secretary.—I hope that will not be seconded.

Prof. Parrish.—I second the motion.

Mr. Bedford.—We have already selected a Local Secretary from Cleveland, and I think it has gone past the time to change.

Prof. Parrish.—I do not want to open any discussion. I only want to say that I seconded it because I have not the slightest choice personally for one place or another; but because I believe we should labor under great

disadvantages in holding a meeting at that place, at this time, for the want of that support which it is so necessary to have from the druggists and pharmacists in the places where we meet. I think it is of too much importance to be overlooked in selecting a place for our annual meeting—the advantage of meeting in a place where a local organization has been, or is likely to be, formed; or where there is a large number of pharmacists, as is the case in Pittsburg, where they need the support that will be given to them by a meeting of this Association. I think it is our duty to go to such places in preference.

Mr. Bedford.—I can say that they are trying in Cleveland now to organize a local association. I have been in correspondence with Mr. Myrtle for several weeks on that point.

Prof. Procter.—While it would be well enough to meet in Pittsburg, to encourage the local association which has been started within a week, we have evidence enough, from the fact that we forced ourselves on St. Louis, that if we go to a place under such circumstances, we may be well received. I think if we conclude to go to this town, where there are now but two members, but which we know is full of enterprise, we stir up such a commotion that there will be a Society formed before we get there.

The Secretary.—I voted and spoke against the selection of Cleveland; but now, since it has been selected, I am certainly heartily in favor of it. I hope our meeting there will have good success.

Mr. Tufts.—I am in the same position. I did all I could against Cleveland; but the matter has been settled, and we have appointed a Local Secretary, and I shall vote for Cleveland.

Mr. Sargent.—I agree in part to what Mr. Tufts and Mr. Maisch have said; but I get up for the purpose of raising a point of order on this proposition. I do not believe that we have any right to reconsider this thing after a Local Secretary has been appointed.

Prof. Ebert.—We have elected this officer, and we cannot put him out. It is against all rules of order. He is an officer of this Society for the next year.

The President.—I shall not decide on the point of order; but I believe the gentlemen are ready for the question. They have heard the objections, and they have heard what is in favor of the reconsideration, and, therefore, as the question is called, I shall put it.

The motion to reconsider was lost.

At the request of the Committee on Specimens, it was granted a month to finish their report and send it to the Secretary.

Prof. Procter.—I would like to know whether it would be improper for the chairman of that committee to furnish the report for publication, in the public papers, or any way it may be desirable to publish it?

The Secretary.—It has been customary for the Permanent Secretary to

have copies of the report separately struck off, and to send a copy to a number of newspapers, and a number of the extra copies was placed at the disposal of the chairman of the Committee on Specimens.

PROF. PROCTER.—My motive was this: one important point with gentlemen who take the trouble and expense to send specimens to this exhibition is a laudable advertisement of their business and manufactures, and that cannot be effected except so far as the observation of those present is concerned, unless the report can be published. As in the natural course of things the publication does not take place for four or five months, they do not get the benefit. I will move that when the chairman of the Committee on Specimens has finished his report, that he be empowered to furnish a copy of it to the journals, leaving it to him as to what journals.

Professor Procter's motion was agreed to.

MR. SHAEFER.—It may be late in the day, but I would offer a suggestion, which the proper parties may apply to themselves. The United States Dispensatory has been printed on most ordinary paper, and as a general rule an Index will not last over a year. As a suggestion, I would recommend that a paper that is more durable should be used for the Index.

PROF. PROCTER.—That is a suggestion to Lippincott, the publisher. The Association has nothing to do with it.

MR. SHAEFER.—The recommendation of this Society, I think, would go far towards securing a change.

The minutes of the sixth session were read and approved, after which the Association adjourned, to meet again in the city of Cleveland, Ohio, on the first Tuesday of September, 1872, at 3 o'clock, P.M.

JOHN M. MAISCH,
Permanent Secretary.

ON the evening of Tuesday, September 12th, the pharmacists and druggists of St. Louis, accompanied by their ladies, met at the spacious parlors of the Southern Hotel, for the purpose of being introduced to the visiting members and their families, and welcoming them, on the evening of their arrival at St. Louis.

On Wednesday afternoon, the ladies of the visiting members were driven out in carriages to the principal places of interest about St. Louis. For Thursday evening a grand banquet had been prepared by the St. Louis pharmacists at the Southern Hotel. The large banquet-hall was finely decorated with flags

and various devices, and an excellent band was in attendance. A number of toasts were proposed and appropriately responded to, and the proceedings were brought to a close at a seasonable hour. Besides the resident and visiting members and their families, a number of prominent citizens of St. Louis from other professions were present on this occasion.

After the final adjournment, the members and ladies were conveyed by carriages to the extensive vaults of the American Wine Company, where the superintendent conducted the party to the various departments, thus giving them an opportunity to witness the treatment of the grape-juice from the press to the bottling and final clarification of their sparkling "Imperial."

The party next visited the celebrated Shaw's Botanical Gardens, where they were introduced to and welcomed by Mr. Shaw, and partook of his hospitality. The extensive grounds and green and hot-houses were next inspected; and the visitors admired the choice collections and artistic display of the numerous flowers, the grotesque forms of the various species of cactus and palms, and the large number of interesting indigenous and exotic herbs, shrubs, and trees, collected in these gardens. The party left reluctantly, regretting that, notwithstanding the kind and hospitable invitation of Mr. Shaw, they were unable to spend there as many days as it had taken hours to take a mere cursory view of the many objects of interest collected here from all sections of the globe.

Friday evening and Saturday morning most of the visiting members left for their homes, carrying with them pleasant recollections of the first meeting of the Association held on the banks of the Mississippi River.

JOHN M. MAISCH,
Recording Secretary.

REPORTS OF COMMITTEES.

REPORT ON THE PROGRESS OF PHARMACY.

The arrangement of materials in the following report is as follows.

I. Pharmacy: apparatus; processes and preparations.
II. Pharmaceutical chemistry.
III. Pharmacognosy.
IV. Pharmaceutical legislation.
V. Necrology.
VI. Pharmaceutical literature.

In offering this incomplete report, I would say that my endeavors to produce a more comprehensive work has been thwarted by business pursuits, which have required so much of my personal supervision and time. It seems that not only a great sacrifice of time and unremitting labor is required in order to collect the scientific material, which is increasing in volume with every succeeding year, but that also the mind should be untrammelled by business pursuits, and excluded from all influences which will disturb tranquil meditation and labor.

The suggestions expressed on the part of several of my predecessors, whether, regarding the desirableness of one permanent reporter, or the division of the work among three or more persons, should receive the attention of the Association. I would suggest the appointment of a permanent reporter on the Progress of Pharmacy, employed and paid for his services by the Association, who shall translate and extract from the various chemical and pharmaceutical journals and periodicals. A division of labor on the annual report has heretofore proven not successful, the work of compilation being usually accomplished

by the chairman only, without assistance from other members forming the committee.

In view of some as yet unsettled points in chemical philosophy, I have retained the old system of notation; while, on the other hand, in regard to chemical nomenclature, which is mainly scientific, and based upon theory only, and therefore liable to change, by the progressive discoveries of science, the proposed nomenclature of Prof. Attfield has been adopted, which is based strictly on pharmaceutical grounds, and which does seem to possess for the pharmacist all of the requisites of a uniform and intelligible system.

The scientific record of the past year, from French sources, has been very meagre. Grim-visaged war is seldom an encourager of the arts and sciences; therefore, mediocre indeed has been the material furnished from that usually prolific source.

The past year has furnished many new, valuable, and interesting discoveries in chemical and physical science, related more or less intimately to pharmacy. The generation of organic principles, by synthesis, has been accomplished in several instances; of which may be mentioned the synthesis of benzoic acid, by Victor Meyer, and of neurine, by Wurtz; but prominently eminent among them all stands the generation of conia, by Hugo Schiff, the first artificial production of an organic alkaloid.

The interesting experiments of Mathiessen and Wright on the substitution products of morphia and codeia are deserving special mention, as they have resulted in supplying the Materia Medica with the new alkaloid, apomorphia. As Dr. Wright is continuing his researches in this field, interesting and valuable results may be anticipated.

The exertions of Emmerling and Engler have given the world still another triumph, by the successful synthesis of indigo blue. This discovery ranks deservedly with that of the artificial production of alizarine, the coloring principle of madder, from anthracene, a constituent of coal tar, and which will do much towards enlightening the views of chemists on the chemistry of the aromatic combinations. Among the numerous investiga-

tors of the chemistry of indigo may be particularly mentioned, O. L. Erdmann, Laurent, Baeyer, Knap, Emmerling, and Engler. The important contributions by Erdmann have first furnished science with some of the most important metamorphoses of indigo. He discovered isatin, and presented a complete series of derivatives, including isatinic acid, &c. At the same time Laurent labored in the same field, which, at a late period, was supposed to have been made complete by the classical publications of Baeyer and Knap, when Emmerling and Engler gave the results of their research to the world; obtained, not by a mere accident, but through the sequence of studied chemical reactions, deduced from a knowledge of the molecular constitution of the bodies subjected to the metamorphosis.

The isomerism of organic bodies has again been brought into notice by the interesting results obtained by Professor Reynolds. Two compounds, corresponding to the formula $C_2H_4N_2O_2$, are known; one of which is the cyanate of ammonium, a product of the laboratory; the other is urea, a normal constituent of urine; and these compounds, although quite different in their chemical properties, are yet identical in composition. Until lately only one combination with sulphur, sulphocyanide of ammonium, was known, until Prof. Reynolds succeeded in effecting a combination of sulphur with urea $= C_2H_4N_2S_2$, the ultimate constitution of which is identical with sulphocyanide of ammonium.

The solution of a scientific problem is of inestimable value, when it furnishes explanations of phenomena, rendering that plain which before appeared as an unfathomable mystery. But is it not of still greater value, if the knowledge which has been imparted by its elucidation leads to improvements in the arts and sciences? Spectrum analysis, whether that from observation of the spectra of the incandescent vapors of elements, or the absorption spectra of liquids, furnishes a method for arriving through physical science to results, which were heretofore obtained by the tedious method of qualitative chemical analysis only. In 1863, Valentine published the first work, "On the Use of the Spectroscope for Physiological and Medical Purposes," followed during the same year by Haerlein, "On the

behavior of some Coloring Matters in the Solar Spectrum." During the past year, an article entitled "What is Spectrum Analysis?" from the pen of W. W. Stoddart, was read before the British Pharmaceutical Conference, in which the author gave a lucid review of all that is known to science since the investigations of Newton on the refraction of light, and the solar spectrum, the discovery of Wollaston, that the spectrum was traversed by six dark lines, which were subsequently resolved, through the patient research of Frauenhofer, into hundreds of lines. He mentioned further, the highly interesting discovery of Bunsen and Kirchhoff, that, when certain metals were burned in colorless flame bright lines were produced in its spectrum, corresponding in every particular with certain dark lines found in the solar spectrum. He also explained the phenomena of the so-called bands of absorption observed in spectra of light previously passed through transparent colored media, whether solid, liquid, or gaseous.

In applying the phenomena of spectrum analysis to certain liquid pharmaceutical preparations, Mr. Stoddart found that each preparation exhibited peculiar bands of absorption, and drew from this the inference, that by its means impurities and adulterations might be detected with absolute certainty. It is quite easy to determine if the tinct. hyoscyami is prepared from leaves of the first or second year's growth, each of these giving a peculiar spectrum. The author has examined a large number of tinctures and other fluid preparations of the British Pharmacopœia, and has pointed out for each preparation its peculiar bands of absorption. On subjecting the ashes of plants and some inorganic drugs to spectrum analysis, Mr. Stoddart found lithium in prepared chalk, cream of tartar, dandelion, gentian, and rhubarb; also in belladonna, tobacco, and wheat. He has also noticed rubidium in beet-root sugar, oak-bark, tea, coffee, and cream of tartar; and thallium in bismuth; iridium in oxide of zinc; strontium in dandelion-root, and prepared chalk, calamine, &c. What valuable assistance the practical application of spectrum analysis may render science for the solution of many an intricate problem is at the present time impossible to foresee.

Pharmacists are all familiar with the appearance of fluorescence, observed in acidulous solution of sulphate of quinia, and other liquid pharmaceutical preparations, as stramomium, hyoscyamus, gelseminum, &c. On passing light through a weak acidulated solution of sulphate of quinia, it loses some properties inherent to ordinary light, namely, that of polarization, and the actinic power to reduce salts of silver, &c.; and if then the same light is again passed through a similar solution of quinine, the original phenomenon of fluorescence will not be repeated, leading the observer to form the inference that some peculiar quality of the light had been thereby removed.

According to the late investigations of Professor Stokes, these solutions possess the power of lessening the number of vibrations of the invisible rays of the spectrum, the vibrations of which are so rapid as to fail to impress the optic nerve, and were it not for fluorescent substances, which possess the power of lengthening their waves and lessening the velocity of their vibrations, these rays would remain to our eyes forever lost, and their existence be only recognizable by human ken, from chemical effects upon certain salts. As to the relation which this beautiful physical phenomenon sustains to pharmaceutical chemistry, it will be seen that scientists now recognize in fluorescence a powerful reagent, capable of recognizing bodies in heterogeneous mixtures of organic principles. Æsculin, the crystallizable principle extracted from the bark of the horse-chestnut, was known to possess a green fluorescence. An investigation of its spectrum, instituted by Prof. Stokes, gave evidence that the two extreme parts of the spectrum were simultaneously affected; and he therefore concluded that the crystalline substance must accordingly consist of two distinct principles instead of one. Subsequent chemical analysis proved the correctness of his conclusion; æsculin was resolved into two glucosides, one of which gave a skyblue fluorescence, and the other a bluish-green. (Druggist and Chemist, Sept., 1870.) Chloral hydrate, the new hypnotic, has been extensively used by physicians during the past year, and although not so extensively prescribed as when first introduced as a remedy, it is still deemed a valuable medicine. A year or two ago, it was only to be found in the

cabinet collections of rare chemicals, a curiosity; but has since been manufactured as an article of commerce by thousands of pounds. Attention is directed to the exhaustive and lucid account given by Dr. Squibb before the American Pharmaceutical Association, 1870, on the Preparation and General Properties of Chloral Hydrate.

Mr. D. Howard introduces his new alkaloid, discovered in cinchona bark, which seems to possess some common characteristics with quinia and quinidia, in producing with chlorine and ammonia the well-known green color and precipitate of dalleiochin, but, on the other hand, seems to differ, by a want of fluorescence of its solutions.

Carbolic acid has been prepared from the volatile oil of an East Indian Plant, Andromeda Leschenaultii, by Mr. Broughton, the government quinologist.

In reviewing the advancement made in chemical and physical science during the last decade, the observer is surprised at the progressive results which have been obtained; the crucible and test-tube; the microscope, as well as the spectroscope, have each been vying with each other in the elucidation of new facts, and acquisitions, practical and useful. It is for us, however, to remember that the state of our knowledge of nature and her laws, is only a tithe of the immensity and grandeur of her works; that we see as yet only through a glass darkly. It behooves us well, therefore, to be ever mindful of our own insignificance, and our ignorance respecting the workings of that First Great Cause who doeth all things well.

In conclusion, allow me to thank the Association for the distinguished honor of appointment as Chairman of the Committee on the Progress of Pharmacy, and the flattering recognition thereby conveyed. Feeling conscious of the incompleteness and deficiency of the Report, I trust it will be judged with kindly considerations. My thanks are also due to Mr. Louis Dohme, for assistance rendered in contributing material for the Report.

Respectfully,

WILLIAM T. WENZELL,
Chairman of the Committee on the
Progress of Pharmacy.

SAN FRANCISCO, Aug. 1st, 1871.

I. PHARMACY.

APPARATUS AND PROCESSES.

Aluminum Weights.—Dr. T. L. Phipson recommends for laboratory weights of the gramme division (from $\frac{1}{2}$ gramme down to $\frac{1}{2}$ miligramme), to make them from aluminum. The advantages are that the weights are much larger in size in comparison with those made of platinum, and almost as durable. Weights of aluminum used on the average two or three times a day during ten years, have proved still as accurate as the day on which they were first used. They were almost as brilliant as when new. They were supplied by MM. Collet, Frères, Paris. Chem. News, London, Nov. 4, 1870.

Improved Mould for Suppositories.—A. W. Gerrard describes an improved mould, in the London Pharm. Journ., Nov., 1870, accompanied by an illustration. It is composed of two pieces of metal, one lying upon the other, kept in position by a pin at each end; the holes forming the moulds are drilled through the top into the bottom piece. The two flat surfaces which meet together form a perfect joint, the weight of the top piece of metal being sufficient to keep it in position, so that none of the melted material can run between. The working of this mould is comparatively simple. Having poured in the substance composing the suppository, and allowed it to cool, it is only necessary to lift the top piece from the bottom, which brings the suppositories with it, then a gentle pressure with a thumb easily removes them.

Improvement for Rapid Filtration.—The Würtemb. Gewerbebl. publishes the following: Good Swedish paper is torn in shreds of about $1\frac{1}{2}$ to 2 inches, and added to the liquid to be filtered. This paper, which should be clean and without adhering odor, should be soaked long enough to form a thin pulp when the liquid is poured into a flannel, or felt bag-strainer, from which the liquid will run beautifully clear. Pharm. Zeitung, March, 1871.

A Filtering Apparatus may also be constructed from blotting-paper, by macerating the paper about half a day in water, pouring the pulpy liquid upon flannel spread over and fastened upon a frame. The water will run through, leaving the paper pulp upon the cloth, which, after being uniformly spread over the flannel, and allowed to dry, will furnish an excellent apparatus for rapid filtrations. Ibid.

Extemporaneous Drop Machine.—An ounce or half an ounce graduated glass measure containing 1 drachm of the liquid is a convenient way of dropping liquids therefrom uniformly. Am. Journ. Pharm., July, 1870.

The Philip Carbo-oxygen Lamp, in which a hydro-carbon is burnt in a current of oxygen without possibility of explosion, and which is said to produce an extraordinary brilliant light, is described in Drug. Circ., Dec., 1870.

A paper of special interest, by Dr. Squibb, on fluid extracts and their menstrua, involving the rate and extent of exhaustion of drugs during the progress of percolation, and supported by tabular statements, was read before the Am. Pharm. Assoc. The author arrived at the conclusions that the officinal processes do not fully exhaust the drug, and that the manner of conducting the processes is not the best, that the maceration at the beginning of the process is useless, and the supposed advantage of coarse powder a delusion. That maceration is useful only when the drug has been partially exhausted; that the menstrua selected are not always the best; and that glycerin is preferable to sugar where either of them gives any positive advantage. He deprecates the general application of glycerin for all fluid extracts. The paper is accompanied with formulæ for special menstruæ for different drugs in which stronger alcohol, officinal alcohol, diluted alcohol, glycerin, and water figure in varying combinations and proportions.

Repercolation.—R. Rother has contributed a paper, in which the utility and advantages which accrue by the process of repercolation in the preparation of fluid extracts is fully treated in

all its practical bearings; also regarding its proper menstrua, comminution of the drug, &c. Chicago Pharmacist, May, 1871.

Freezing of Saline Solutions.—Prof. G. C. Wittstein, in reviewing the conjecture, that the greater the solubility of the salt, the greater also the freezing tendency of its solutions, states it to be erroneous; and also that facility of crystallization of a salt should indicate equal capacity for the freezing of the solution, is based upon a supposition equally delusive. The phenomena may appear in isolated, exceptional cases. Among 27 solutions of chemical reagents exposed during winter, during three weeks, to a cold of —3 to 4° C., only four were found frozen, as follows: Solution of oxalic acid (1 — 9), phosphate of soda (1 — 14), nitrate of silver (1 — 49), sulphate of lime (1 — 400). Freezing took place unequally, commencing first with phosphate of soda, next sulphate of lime, then nitrate of silver, and lastly oxalic acid. Zeitschr. d. Allg. Oest. Apoth. Vereines, June, 1871.

Method for removing the Solid Saline Contents from Retorts.—The residue in retorts from the preparation of nitric, muriatic, and acetic acid, which assumes on cooling a solid consistence, frequently occasions trouble, and often the breaking of the retort, while endeavoring to remove it. Lehmann recommends the following simple method as eminently practical: The retort, after cooling and closure of its tubulus, is filled with water, and then with the neck downward is placed into some suitable vessel for several days. The salt is gradually dissolved, the saturated, heavy solution sinking to the bottom, while new water rises to exert its solvent action. From Pharm. Cent. Halle; N. Jahrb. für Pharmacie, Mai u. Juni, 1870.

Removal of dried Albumen from Vessels.—According to Dr. Steinde, vessels in which albumen or albuminous mixtures have been kept can be best cleansed by a mixture of equal parts of a saturated solution of bichromate of potassium and sulphuric acid. Even burnt albumen is so far destroyed in a short time by this mixture that the vessel can be cleaned very readily by means of warm water and a brush. (Philadelphia Ledger); Dental Cosmos, March, 1871.

Temperature at which the reduction of Metallic Oxides is effected by means of Hydrogen Gas.—From experiments instituted by W. Müller the following results were obtained: Oxide of iron, prepared from the nitrate and precipitated by ammonia, is reduced by a current of hydrogen at a temperature of 286° C.; oxalate of iron, at 278° C.; oxide of copper, at about 135° C.; oxide of cobalt is brought at 125° C. to the magnetic oxide, and at 320° is reduced to the metallic state; and oxide of nickel is reduced at 270° to metallic nickel. Oxide of zinc is not affected at the highest heat attainable in a glass tube. Peroxide of manganese is reduced at 202° C.; antimonic acid is reduced at a temperature of 215° to oxide of antimony, and is completely reduced at the boiling-point of mercury. Arsenic acid is reduced by hydrogen at 145° C. to arsenious acid, and heated beyond this is not further reduced. Oxide of lead and minium are reduced at 510°—315° C., red oxide of mercury at 230 C., oxide of silver at 70°—80° C., oxide of gold at 85° C., and oxide of platinum at ordinary temperatures. Neues Jahrb. f. Pharm., Nov. and Dec., 1870.

A new method of heating Stoneware Pans and Stills, by which a temperature ranging from 100° to 700° F. can safely be obtained has been patented by J. A. Coffey, and consists, in the main, in causing heavy paraffine oil to circulate first through a coil of pipes in a furnace, and then through the jackets of the pans or stills. Chem. News, June, 1870; Am. Journ. Pharm., Sept., 1870.

Simultaneous Boiling of Two Liquids which are not Miscible.—A. Kundt gives an account (Annalen der Physik und Chemie) of a series of experiments made with water and benzole, water and oil of cloves, water and sulphide of carbon, and concludes that two liquids, not miscible with each other when in contact, boil at a lower temperature than when the most volatile of these liquids is brought to ebullition by itself. Dental Cosmos, Jan., 1871.

Artificial Production of Ice.—O. Wartha regards bisulphuret of carbon as an excellent agent for the artificial production of

ice for laboratory purposes. On blowing a strong current of air by means of the table blowpipe upon water contained in a glass dish, to which a few c.c. of the bisulphuret were added, the thermometer sank rapidly to —13° C., the water freezing to solid ice. Bericht d. Deutsch. Chem. Ges., 3. Jahrg., No. 2; Arch. d. Pharm., July, 1870.

An Essay on Filtering-Papers and Filters, by J. M. Hirsh, containing valuable and practical observations on their uses and application in pharmacy. Proc. Am. Pharm. Assoc., 1870.

A New Apparatus for the Concentration and Distillation of Sulphuric Acid has been invented by Cotelle (Journ. de Pharm. et de Chimie, 1869), consisting of a cylinder composed of infusible rock, and the lower portion of which is filled with pieces of pumice-stone. An ascending current of hot air being made to pass the acid percolating through the pumice-stone, it becomes concentrated, and may be distilled at once by so regulating the flow of the acid as to vaporize it before it reaches the lower end of the cylinder. Arch. d. Pharm., March, 1870.

Reversion Spectroscope.—A description of Zollner's reversion spectroscope, an important addition to the resources of spectrum analysis, will be found in Drug. Circ., Dec., 1870.

An Automatic Regulator for maintaining constant temperatures in some chemical and pharmaceutical operations has been devised by F. Baden Benger, and is described in the Pharmaceutical Journal and Transactions of September, 1870. The advantages claimed for this arrangement are extreme sensitiveness, certainty of action, and simplicity of construction; it is applicable to any operation in which gas is used as a source of heat, whenever it is desirable to maintain a constant temperature without continual watching, as in the air-bath, drying closet, fractional distillations, evaporations, &c.

Beaumé's Hydrometer.—Dr. Wilson H. Pile read a paper before the Am. Pharm. Assoc., on the relation existing between the degrees of Beaumé's hydrometer, and their specific gravity, and gave simple formulæ by which the former are reduced to

their corresponding gravity. The rules apply to liquids lighter and heavier than water.

Size of Liquid Drops.—Quincke, of Berlin, has found that the size of drops bears a fixed relation to the chemical composition of the liquid. He has proved experimentally that all liquids, at a temperature near the liquefying point, has specific cohesions, which are proportionate to the numbers 1, 2, 3, 4, &c. Taking the specific cohesion of the metallic bromides and iodides as 1, that of mercury, the nitrates, the metallic chlorides, the sugars, and the fats, will be 2; that of water, the carbonates, the sulphates, and probably also the phosphates, will be 4. In the case of the metals, the specific cohesion of lead, bismuth, and antimony, is 2; that of platinum, gold, silver, cadmium, tin, and copper, is 4; that of zinc, iron, and palladium, 6; that of sodium, 12. Druggist's Circular, July, 1871.

Attfield's Saturation Tables, for Acids and Alkaline Carbonates.

EQUIVALENT WEIGHTS of Citric Acid, Tartaric Acid, Carbonate of Potassium, Bicarbonate of Potassium, Carbonate of Sodium, Bicarbonate of Sodium, Carbonate of Ammonium, and Carbonate of Magnesium; repeated (IN BLACK) for 20 parts of each, and incidentally (in Roman) for other proportions. (Exact to two places of decimals.)

Citric Acid; ($H_5C_6H_5O_7$, H_2O) : 3 x 2=140, . . .	**20.00**	18.66	**16.96**	**14.00**	**9.78**	**16.66**	**23.72**	**29.31**
Tartaric Acid; $H_2C_4H_4O_6$=150, ...	21.43	**20.00**	**18.26**	**15.00**	**10.49**	**17.85**	**25.42**	**31.41**
Carb. of Potas.; K_2CO_3+16 pr. ct. Aq=164.285, .	**23.47**	**21.90**	**20.00**	16.43	11.48	19.52	27.87	34.40
Bicarbonate of Potassium; 2($KHCO_3$)=200, . .	**28 57**	**26.66**	24.34	**20 00**	13.98	23.81	33.89	41.90
Carbonate of Sodium; Na_2CO_3, $10H_2O$=286, . .	**40 08**	**38.13**	34.81	28.60	**20.00**	34.04	48.47	59.98
Bicarbonate of Sodium; 2($NaHCO_3$)=168, . .	**24 00**	**22.40**	20.45	16.80	11.74	**20.00**	28.47	35.18
Carbonate of Ammonium; ($N_4H_{16}C_2O_6$)÷2=118,	**16.85**	**15.73**	14.36	11.80	8.25	14.04	**20.00**	24.71
Carb. of Mag. (($MgCO_3$)$_3$, $Mg2HO$,$4H_2O$)÷4=95.5,	**13.64**	**12.73**	11.62	9.55	6.68	11.37	16.18	**20.00**

The amount of acid given in any column will saturate the amount of carbonate in the same column, and *vice versa.*

The amounts of carbonate in any column are equal to each other in chemical power. The amounts of acid are also equivalent.

Lemon Juice (sp. gr. 1039) contains, on an average, 7 per cent. by weight of citric acid.

THE SAME TABLE IN ROUND NUMBERS, FOR PURPOSES OF PRESCRIBING AND DISPENSING. (The old names in Latin.)

Citric Acid (Acidum Citricum, B. P.), ...	**20**	19	**17**	**14**	**10**	**17**	**24**	**30**
Tartaric Acid (Acidum Tartaricum, B. P.), . .	22	**20**	**18**	**15**	**11**	**18**	**26**	**32**
Carb. of Potassium (Potassæ Carbonas, B. P.), .	**24**	**22**	**20**	16	12	20	28	35
Bicarb. of Potas. (Potassæ Bicarbonas, B. P.), .	**29**	**27**	24	**20**	14	24	34	42
Carb. of Sodium (cryst.) (Sodæ Carbonas, B. P.),	**40**	**38**	35	28	**20**	34	49	60
Bicarb. of Sodium (Sodæ Bicarbonas, B. P.), . .	**24**	**22**	20	17	12	**20**	29	36
Carb. of Ammonium (Ammoniæ Carb., B. P.), .	**17**	**16**	14	12	8	14	**20**	25
Carb. of Mag. (Magnesiæ Carbonas, B. P.), . .	**13**	**13**	11	9	7	11	16	**20**

The Table is read thus: 20 grains of Citric Acid will saturate 29 grains of Bicar-

onate of Potassium; 20 grains of Bicarbonate of Sodium will saturate, or be saturated y, 18 grains of Tartaric Acid; 11 grains of Tartaric Acid = 8 grains of Carbonate of Ammonium; 20 grains of Bicarbonate of Sodium are equivalent to, or will do as much work as, 34 grains of Carbonate of Sodium; 14 grains of Citric Acid are as strong as 15 of Tartaric Acid. It is occasionally convenient to double the numbers, halve them, or take some other proportion; also to employ them in weights other than grains.

Lemon Juice contains, on an average, 32½ grains of Citric Acid in one fluid ounce, or 4 grains per fluid drachm.

From Attfield's Chemistry; Chicago Pharm., Jan., 1871.

Analysis of Mineral Waters.—During the evaporation of alkaline mineral waters the carbonated earths usually become so strongly adherent to the dish, that it is often quite difficult to effect their removal. To guard against it Mohr strongly acidulates the water with formic acid. After the subsequent evaporation to dryness, solution in water, and filtration, the entire amount of silicic acid remains on the filter. When the filtrate is evaporated and ignited the formic acid is decomposed into carbonic acid and water without charring the residue, the salts being left in precisely the same condition as they were before the addition of formic acid. Zeitschr. f. Analyt. Chemie, viii, 309.

Sources of Error in Volumetric Analysis.—Robert R. Tatlock directs attention to a common source of error occurring in this method of analysis, which is caused by the contraction which saline solutions suffer on dilution, and also in the expansion of saline solution, which, at equal temperatures, is greater than that of water. It is, therefore, a desideratum to work as nearly as possible at normal temperatures, and with dilute solutions only. From Glasgow Phil. Soc.; Zeitschr. d. allg. œst. Apoth., Vereines, June, 1871.

A new delicate Test for Alkalies.—Boettger recommends an alcoholic solution of alkanin, with which Swedish paper is impregnated. The minutest trace of ammonia turns the red color blue. From Neues Jahrb. f. Pharm., Mai u. Juni, 1869; Am. Journ. Pharm., July, 1870.

Alkanet Paper.—This sensitive reagent for acids and alkalies is prepared by dipping unsized paper in an ethereal tincture of

alkanet root. To prepare the blue paper from this it is only necessary to dip the above paper in a weak solution of sodium carbonate. Drug. Circ., Dec., 1870.

Analysis of Crab Orchard Salt.—This salt, obtained from the mineral waters near Crab Orchard, a small town in Lincoln County, Kentucky, has again been analyzed by John T. Viley, with the following results:

Sulphate of Magnesium,	65.463
" Potassium,	2.735
" Sodium,	9.480
Chloride of Sodium,	0.602
" Lithium,	0.072
Water of Crystallization,	18.933

The salt was dried at 120° C. Am. Journ. Pharm., May, 1871.

Quantitative Estimation of Copper.—E. Ulrici has directed attention again to the advantages derived by the estimation of copper as Cu_2S. Copper solutions treated with sulphide of hydrogen, the precipitated CuS dried at 100° C., and ignited in the absence of air, loses an equivalent of sulphur, leaving a compound of Cu_2S. If, on the contrary, the ignition is effected with access of air, a mixture of Cu_2S and 2CuO is the result. As the equivalences of $Cu_2S=992$ and $2CuO=992$ are equal, it does not matter whether the precipitate is ignited with or without the access of air; and as the presence of free sulphur does not influence the result, the estimation of copper may equally be made in solutions containing iron. Journ. f. Pract. Chemie, cvii, 110.

A New Flux for Minerals, by Dr. Schonn.—A steel crucible, $1\frac{1}{4}$ inches deep, and the same in diameter, is heated over a lamp; into this are projected a few pieces of metallic sodium, and afterward the finely divided and dry mineral is added. The crucible is then covered and heated red hot. As soon as the reaction is finished, the contents of the crucible are allowed to cool, and water is cautiously added, sufficient for the purpose of filtration. The fused mass is then thrown upon a filter and thoroughly washed. In the filtrate will be found the electro-

negative constituents of the mineral combined with the sodium, such as sulphur, cyanogen, chlorine, chromic acid, silica, molybdic and tungstic acids, and such oxides as are soluble in soda-lye. On the filter will be found the metals and the oxides; also, the lower oxides of titanium, molybdenum, tungsten, and possibly silica and alumina. The contents of the filter, and the solution in the filtrate can be further treated according to the order of chemical analysis. From Chem. News; Dental Cosmos, Jan., 1871.

Separation of Tin, Antimony, and Arsenic.—F. W. Clark (Am. Journ. Science, Jan., 1870) proposed to pass sulphuretted hydrogen into the solution of the metals, strongly acidulated with oxalic acid; the tin was stated to remain in solution. Albert B. Clark, Jr., has proven in Wittstein's laboratory, the incorrectness of the proposed method of analysis. Am. Journ. Pharm., May, 1871.

MEDICATED WATERS.

Solutions of Alkaloids in Medicated Waters.—Professor J. M. Maisch verified the observation of John D. Owens, that medicated waters prepared according to the Pharmacopœia, when mixed with neutral salts of alkaloids, will precipitate the base from solution, which, in the instance of morphia, was found attached to the sides of the bottle. The Professor having heretofore advocated the preparation of medicated waters by distillation for superiority of flavor only, now points to the above as a stronger argument; and as long as the Pharmacopœia directs the preparation to be made from volatile oils by the aid of magnesia, it is plainly the duty of the pharmacist to neutralize or faintly acidulate these waters wherein the salts of alkaloids are to be dissolved. Am. Journ. Pharm., July, 1871.

Rose water can be expeditiously prepared, according to A. E. Ebert, by dropping the oil into boiling distilled water, and incorporating by agitation. Other medicated waters may be prepared in a similar manner. Pharmacist, Dec., 1870.

Mineral Waters.—R. Rother publishes an elaborate article

on the manufacture of the various artificial mineral waters, with formulas for Vichy (Grand Grille Spring), Kissingen (Racoczy, modified), Kissingen (Racoczy, original), Congress, and Selters. Pharmacist, Aug., 1870.

DECOCTIONS.

Decoct. Aloes Comp.—W. A. Tilden, in answer to Query No. 176, for investigation, issued to the members of the conference: Compound decoction of aloes loses its bitterness after some time; to what is this due? points to aloin as the constituent of the drug to which the changes observed are probably due. Crystallizable aloin being the body to which all varieties of aloes owe their bitterness, is said to be decomposed when in alcoholic or aqueous solutions, with great facility, by the simple application of heat; but the author has found that it is not changed in this way appreciably, provided the solution is quite neutral, or slightly acidified. The author also refutes the statement advanced by Kosmann in the Journal de Pharmacie ten years ago, that aloes was a mixture of glucosidic bodies; he found that when aloin is boiled with sulphuric acid and water no glucose is generated. He also proved that aloin neither incited or prevented fermentation, or suffered change in itself when mixed with a solution of sugar and yeast. A solution of aloin when exposed to air gradually absorbs oxygen, the solution deepening its color, but the change is slow. If, on the other hand, a small quantity of any alkali is introduced, the solution becomes in a few hours of a deep brown color, and in three or four days the aloin disappears, and is transformed into a perfectly insipid substance devoid of bitterness. By the way of experiment, equal parts of aloin and carbonate of potassium were dissolved in water, and the solution left in an imperfectly closed flask for about a week, when the solution lost its bitter taste entirely. On boiling some extract of aloes with carbonate of potassium and water, in the proportion directed for compound decoction of aloes, the same results were obtained. Pharm. Journ., London, Nov. 5th, 1870.

EXTRACTS.

Yield of Extracts.—E. Schwabe has obtained the following amount of extract from the best Smyrna opium: 44.44, 37.50, 54.15 per cent. From socotrine aloes, by the process of the Prussian Pharmacopœia (cold water), 31.25 and 15.5 per cent. Extract from hepatic aloes, 48 per cent., and from Cape aloes, 16.6 per cent. Arch. d. Pharm., June, 1870.

Extractum Ferri Pomatum.—On the plea that this extract as usually prepared, varies greatly in the amount of iron it contains, it is recommended to saturate the expressed juice of the fruit, heated on a water-bath, with hydrated sesquioxide of iron. The filtered saturated solution, evaporated to the consistence of an extract, contains about 10 per cent. of iron. Pharm. Zeitung.

Ethereal Narcotic Extracts.—Lefort (Journ. de Pharm. et de Chimie, Feb., 1870) has applied bisulphuret of carbon in the preparation of extracts (extraits sulfo-carboniques) from narcotic plants. The component parts of the extracts are stated: 1. A fatty matter. 2. Chlorophyl. 3. The peculiar odoriferous principle. 4. One, or several organic bases as salts. The extracts present a butyraceous consistence, are soluble in absolute alcohol, ether, chloroform, the fatty and volatile oils. The bisulphuret of carbon is purified by repeated washing with water, and distillation from one hundredth of its weight of oil of almonds. Arch. der Pharm., June, 1870.

Dry Narcotic Extracts.—Purified dextrine is proposed by L. W. Jassoy, as the best material for reducing extracts to a dry and pulverulent state. The indifferent and non-hygroscopic qualities of dextrine, and its ready solubility in water, render it peculiarly applicable for this purpose. Dextrine is dissolved in six to eight times its weight of cold water, and after twenty-four hours' repose filtered. The filtrate is evaporated to a syrupy consistence, and alcohol stirred in until the dextrine is precipitated. After twelve hours pour off the alcohol, thoroughly dry the purified dextrine on a water-bath, and reduce the residue to powder.

To prepare the powdered extract, heat a weighed quantity of extract in a porcelain mortar until quite soft, and incorporate an equal weight of the purified dextrine, and set aside to cool. The mass, which has become brittle, and may be easily powdered, is placed into a drying oven for complete desiccation. The loss of weight sustained by drying must be replaced by the addition of more dextrine. Arch. d. Pharm., Dec., 1870.

Extract of Meat, Liebig's, being of a red color, is very soon disliked by patients; by filtration it becomes of a pleasing appearance, and is taken for a much longer time without becoming repugnant. After maceration the magma is thrown upon a filter, a little more of meat extract and water having been used. From Pharm. Zeitg., No. 22, 1870. Am. Journ. Pharm., July, 1870.

Professor Reichardt has analyzed an extract of meat, which has made its appearance in Germany, and is prepared by Buschenthal & Co., Montevideo. On comparing his result with those of Liebig and Vogel, and also his own analysis of the extract prepared by the Liebig Company of Fray Bentos, he comes to the conclusion that the absolute purity of Buschenthal's extract can no longer be entertained as doubtful. Arch. d. Pharm., April, 1870.

Malt Extract.—Mr. Albert E. Ebert, after alluding to the shameless imposition practiced in the manufacture and sale of Hoff's and various other malt extracts, which, according to Wittstein and Hager, are nothing more than a good article of brewers' beer, flavored and colored with various substances, gives a formula for preparing from barley malt the so-called "Liebig's" Malt Extract, which is an agreeably tasting, syrupy liquid, containing, besides, the sugar of the malt, dextrine, albumen, and the phosphates of the grain. Pharmacist, Nov., 1870.

New Method of Preserving Meat.—Dr. Paul reported to the British Pharmaceutical Conference, 1870, a new method for preserving meat by submitting it to a strong pressure, thus removing one-half of the juice contained in the muscular tissue. This juice contains the constituents of Liebig's ordinary extract

of beef, with the addition of all the soluble albumen. The juice, evaporated in a vacuum pan with the addition of a small quantity of gelatine, is rendered solid. The author contends that, by Liebig's method, the fibrin and albumen are destroyed, and therefore, unfitted for food, merely acting as a stimulant. Chem. and Drug., Aug. 15, 1871.

CONFECTIONS.

Confection of Senna.—The following modified formula is presented by John W. Ehrman:

Take of Tamarinds,	. . . . .	20 parts.
Figs, bruised,	. . . . .	20 "
Prunes, sliced,	. . . . .	15 "
Fl. Ex. of Senna,	. . . . .	10 "
" " Ginger,	. . . . .	1 "
Sugar,	. . . . .	30 "
Water, a sufficiency.		

A detail of the manipulations is published in the Chicago Pharmacist, Jan., 1871.

FLUID EXTRACTS.

James W. Mill argues in favor of the present officinal strength of fluid extracts (16 troy ounces to the pint), but proposes modifications in the fineness of the comminuted drug, and the temperature at which the percolates should be concentrated, illustrating the subject by proposed formulas for the fluid extracts of Buchu, Cinchona, Hyoscyamus, and Rhubarb. Comparative experiments were also made by the author, by exhausting equal weights of buchu in two different shaped percolators, one being six feet high and two inches wide at the mouth, gradually tapering to one and a quarter inches at the bottom; the other being of the usual proportions, three and a half inches wide, and fifteen inches high. The specific gravity of the percolates being noted, the results were found to be very near alike. Chicago Pharmacist, 1871.

Extractum Carnis Fluidum.—Prof. E. Parrish proposes a liquid extract of meat preserved by glycerin, and proposes to separate the gelatine contained in beef stock and Tourtellot's

extract, which interferes with eligible appearance and physical properties of the solution, by means of tannin, added in small portions to a largely diluted solution of the extract. The liquid extract prepared from beef stock, consists of six parts of beef stock, to three or four of water, and one of glycerin. In that prepared from Tourtellot's extract, one part of the latter is represented in eight parts of water, preserved by the addition of half a part of glycerin. Liebig's extract is free from gelatine, and the tannin process may be therefore dispensed with. This fluid extract is well adapted for making extemporaneous mixtures with iron, quinine, phosphates, and other tonics. Wine of bitter iron may be added advantageously, in the proportion of one part of the wine to three of the liquid extract. Strong alcoholic liquids are incompatible with it. Am. Journ. Pharm., May, 1871.

LINIMENTS.

Camphor liniment is recommended by J. Weichselbaum as an application to the skin when irritated by cowhage, relieving the itching instantly. Am. Journ. Pharm., Nov., 1870.

MIXTURES.

Solution of Guaiac Resin for Medicinal Use.—James T. Shinn, in answer to Query 7, of the American Pharmaceutical Association, recommends a solution of the resin in glycerin and in syrup, with the intervention of solution of potassa, as the best and most eligible liquid form for the administration of guaiac resin. Formulæ for the same are published in the Proceedings for 1870, and in American Journal of Pharmacy, Feb., 1871.

Aromatic Sulphuric Acid.—This formula is suggested by John W. Ehrman, and will furnish a preparation which is miscible with water, without turbidity, and will not, on keeping, deposit sediment.

Take Sulphuric Acid,	℥iij.
Fluid Extract of Orange Peel,	f℥j.
Red Rose Leaves,	ʒij.
Boiling Water,	f℥j.
Alcohol, a sufficient quantity, ad	f℥xviij.

Chicago Pharmacist, Jan., 1871.

Mistura Cretæ.—The following formula is recommended by H. P. Reynolds, as yielding a mixture not liable to ferment:

℞. Cretæ Præp.,
Pulv. Gum. Acac.,
Glycerinæ (pure), āā, ... ℥j.
Aquæ Cinnamomi, ... ℥xv.
Mix in the usual manner.

W. R. Jones avoids the danger of fermentation in the chalk mixture by keeping the chalk, gum, and sugar, mixed in the dry state, and adding a drachm of this powder to f℥ss. each of water and cinnamon water for each f℥j of the chalk mixture wanted. Amer. Journ. Pharm., Sept., 1870.

Chlorodyne.—The analysis of this secret medicine by E. Smith, is considered inaccurate by Thomas S. Dowse, M.D., who bases his assertion on physiological observations, having found that the preparation made according to E. Smith's formula, when given in doses to produce sleep, contracts the pupil, whilst an equivalent dose of Dr. Collis Browne's chlorodyne causes no contraction, and argues that this peculiarity of the latter is due to the presence of belladonna, or its alkaloid, atropia. When atropia was added to the preparation made by E. Smith's formula, no contraction of the pupil was produced after a full dose had been administered. Amer. Journ. Pharm., Sept., 1870.

Emulsion of Almonds.—H. P. Reynolds offers a formula for a solid extract representing a "concentrated emulsion of almonds," for the extempore preparation of the officinal emulsion. Amer. Journ. Pharm., Feb., 1871.

Musk.—Lailler recommends, for internal use, to triturate the musk with hot water previous to adding the vehicle. On cooling a portion of the musk is precipitated, which, being a fine powder, is readily miscible on shaking. (Journ. der Pharm. et de Chemie); Arch. der Pharm., Jan., 1871.

MUCILAGES.

Mucilage of Gum Tragacanth is prepared with greater expediency if the powdered gum is first rubbed up with some glycerin before water is added. Pharm. Zeit., Nov., 1870.

OINTMENTS.

Savine Ointment.—T. H. Bateman (Pharm. Journ., July 2d, 1870) recommends in the preparation of the ungt. sabinæ of the British Pharmacopœia from fresh savine tops, the addition of gum benzoin to prevent change and rancidity. A formula is also given. Am. Journ. Pharm., Sept., 1870.

Cucumber Ointment.—Luther E. Sale publishes a formula for this ointment in Pharmacist, Oct., 1870.

Medicated Waters.—In an article on the medicated waters of the British Pharmacopœia, George Brownen calls attention to the various changes which they are liable to undergo when kept, and the probable causes of these changes, recommending at the same time various modifications of the officinal formulas. Pharmacist, Nov., 1870.

For Benzoating Ointments Extemporaneously.—C. P. Bolton communicates a process for benzoating ointments, the formula of which is published in the Am. Journ. of Pharmacy for April, 1871. It is a preparation of castor oil holding the soluble constituents of the benzoin in solution in the proportion of two to one. He employs $\frac{1}{2}$ a drachm for benzoating 1 ounce of ointment. Am. Journ. Pharm., April, 1871.

Ointment of Iodide of Sulphur.—In preparing this ointment, A. E. Ebert finds oil of lavender the best menstruum with which to reduce the iodide to a fine state of division. Pharmacist, Dec., 1870.

Ointment of Mercuric Nitrate.—R. Rother, in reviewing the imperfections of the officinal formula for this ointment, and other formulas based on the same principle, calls attention to the fact that by the officinal process both the mercurous and mercuric nitrates of mercury are formed in the solution, which, when brought in contact with the heated fats, results not only in the formation of numerous fatty acids, and other organic compounds enumerated by the author, but also in the decomposition of the above salts of mercury and the formation of compounds of mercury with the fatty acids, thus producing an

unsatisfactory and variable preparation. He proposes to remedy the defects by dividing the process by first oxidizing the fats by heating with nitric acid, and mixing with this, when it begins to stiffen, a solution of the mercuric nitrate. The formula is as follows:

Take of	Mercury, ...	1½ troy ounces.
	Nitric Acid, sp. gr. 1.42, . . .	3½ "
	Lard (pure).	16½ "

Dissolve the mercury in 900 grains of the nitric acid with the aid of heat, and keep the solution gently warm to prevent crystallization before it is used. Melt the lard in a suitable vessel, with a moderate heat; then add the remainder of the nitric acid, and continue the heat *without* stirring the mixture as long as moderate effervescence continues; but if this becomes too violent, remove the mixture from the fire, and only replace it when the action slackens too much. Finally, when effervescence ceases, and the liquid only boils even under an increased heat, remove the mixture from the fire altogether; and when it begins to stiffen, add the mercurial solution, and mix thoroughly. Pharmacist, July, 1870.

Chas. Fredigke found in preparing some ointment by the above process, that the lard and acid on boiling rapidly, turned dark brown, and yielded on addition of the mercurial solution a raw umber-colored ointment. In a second trial the effervescence was allowed to go on very slowly, and was confined to the centre until it ceased, and whilst the mixture was kept at a temperature between 185° and 190° F., was briskly stirred with a wooden spatula to insure the complete liberation of nitrous acid fumes, and the reaction of the acid on the lard, when the result was a most excellent ointment, both in color and consistence. Pharmacist, Jan., 1871.

To Camphorate Blisters.—M. Dechamps D'Avallon has suggested when it is desirable to camphorate a blister, it may be readily accomplished by dropping on its surface a few drops of saturated solution of camphor in chloroform, made by adding two parts of the latter to four of the former. From Journ. de Pharm., Août, 1870.

Carbolic Cerate.—A formula for such a preparation is furnished by Chas. A. Bœhme.

R. Adipis,	℥x.
Ceræ Albæ,	℥v.
Terebinth. Can.,	℥j.
Acidi Carbolic,	℥j.

M. S. A.

American Journal of Pharmacy, 1871.

FATTY OILS.

Bleaching of Oils.—The bleaching of fatty oils may be accomplished by shaking with equal volumes of water, holding permanganate of potassium in solution (1 gr. to 20 oz. of water). Separate by means of a separatory funnel, and wash with water. Arch. d. Pharm., Aug., 1870.

Fixed Oil of Almonds.—According to Dr. Hager, there is considerable difference between the fixed oil obtained from the large sweet, and the oil from the small bitter almonds, which is easily shown by the Elaidin test, the former yielding a much larger quantity of Elaidin, and of a lighter color than the latter.

Test for the Fixed Oil of Almonds.—Hager (Pharm. Centr., 1870, 217–218) recommends the following test to distinguish true oil of almonds from the oil of peach and apricot seeds: Equal volumes of the oil and 25 per cent. of nitric acid are shaken together in a test-tube; an emulsion-like mixture is obtained, which separates again on standing. All true almond oils yield a purely white mixture, and after many hours the separated mixture is still white. On heating the mixture to 60° C., almond oil remains white, or becomes faintly yellowish-white.

The Oils of Peach and Apricot Seeds shaken with the nitric acid at once turn yellowish, the coloration increasing in a half hour to a rather deep red-yellow. Mixtures of almond and peach oil may at first be white, but after one-half to one hour will be more or less reddish-yellow. Many other oils, for instance the ground-nut oil (Arachis) behave towards nitric acid like almond oil. Such an adulteration is readily discovered by

sulphuric acid. Upon a porcelain slab eight or ten drops of the oil are stirred together with five or six drops of strong sulphuric acid. Almond oil is colored yellow, and retains that color for some minutes; other oils, though often yellow at first, quickly turn green, greenish-brown, or brown. Am. Journ. Pharm., Sept., 1870.

Fulmar Oil is the name of an oil obtained on the island of St. Kilda, of the northern part of Great Britain, from a sea bird, a species of petrel, the Fulmar glacialis, or the Procellaria glacialis of Linnæus, the Fulmar petrel of Buffon, belonging to the family of Procellarieæ, order Natatores. It inhabits the Polar regions, is unknown in any other of the outer Hebrides, and is found only on St. Kilda. It breeds enormously there in the rocks, laying a single large white egg, and the young is fed by the oily matter disgorged by the parents. The oil has a clear, reddish, sherry color, and a powerful and peculiar odor, its spec. grav. 902. It seems to possess properties analogous to cod-liver oil, and when treated with a drop of oil of vitriol, it produces precisely the same color reaction as cod-liver oil, which, if the generally received views be correct, would show it to be a liver oil. London Pharm. Journ., Nov., 1870.

Examination of Oils.—To prevent too violent action, when the concentrated sulphuric acid test is applied to oils, Dr. Flückiger recommends to dilute the oil to be tested with bisulphide of carbon, sulphuric acid having no action on the latter, and mixing without evolution of heat. Drug. Cir., Dec., 1870.

Newfoundland Cod-liver Oil.—The process of manufacturing this oil, at Portugal Cove, Newfoundland, is described in the Amer. Journ. Pharm., Nov., 1870.

Test for Olive Oil.—Dr. Ramon Codina Langlies adds to 3 grm. of the oil to be tested, contained in a small flask, 1 grm. of nitric acid (prepared previously by mixing 3 parts of the acid of spec. grav. 1.33, with 1 part of water), and heating the mixture in a water-bath. The purity of the oil is established if it assumes a lighter color; while, on the other hand, the

presence of oil from seeds communicates a more or less red color. Wittstein's Vierteljahresschr., 1 Hft., 1871.

Test for Free Acids in Fatty Oils.—A. Rumpler recommends to shake the oil with an equal volume of a saturated solution of carbonate of sodium. If the oil is free from uncombined fatty acids, the solution of the carbonate, on separating from the oil, remains perfectly clear, otherwise it will assume the form of a thick opaque emulsion. Pharm. Centralhalle, No. 16, 1870.

Chloral-hydrated Cod-liver Oil.—According to the Gaz. farm. Ital., the addition of 10 grs. of crystallized chloral hydrate to 190 grs. of cod-liver oil, dissolved by a gentle heat, will improve the taste of the oil, and be found a useful preparation for controlling the colliquative sweats attending phthisis. Pharm. Zeitung., June, 1871.

Process for Purifying Oil for Manufacturing.—The process of M. Keyser, which is applicable to all oils, has given excellent results in the manufacture of rape-seed oil. Into 100 kilogrammes of oil put a mixture of 600 grammes of solution of ammonia, and 600 grammes of water, and agitate the barrel well until the alkali is perfectly mixed, which may be done in fifteen minutes. The barrel is sealed hermetically, and after three days' repose the oil is decanted and filtered. The residue is used for the manufacture of soap. Oil thus worked contains not a trace of acid, and the mucilaginous impurities are destroyed or precipitated. From Journ. de Chimie Méd. Août, 1870. Am. Journ. Pharm., Nov., 1870.

ESSENTIAL OILS.

Oil of Bitter Almonds. Test for Nitrobenzine in Oil of Bitter Almonds.—Flückiger recommends for this purpose the process usually employed for the consecutive conversion of nitrobenzine by the action of nascent hydrogen, first into aniline, and finally, by proper oxidizing agents, into rosaniline, &c. He pours upon granulated zinc diluted sulphuric acid (1.11), adding the oil of almonds to be tested, shaking frequently, and filtering through a moistened filter. The colorless aqueous filtrate, which now

contains aniline, if the oil under examination contains nitrobenzole, may be carried by oxidizing agents into the colored compounds of aniline. On adding to a small portion of the liquid a few minute grains of chlorate of potash, a violet color is produced, with chromate of potassa a blue, and with sesquichloride of iron a red. The most sensitive of these agents is the chlorate of potassa, which will indicate 1 per cent. of nitrobenzine in oil of bitter almonds. Arch. d. Pharm. Nov., 1870.

Behavior of Oil of Valerian towards Sulphuric and Nitric Acids.—F. A. Flückiger. A magnificent blue is produced when one drop of oil of valerian, dissolved in 15 drops of bisulphuret of carbon, is well shaken with sulphuric acid, and afterward one drop of nitric acid, spec. grav. 1.2, is added. This reaction is to a high degree sensitive, and was not found productive of analogous results, in a series of other essential oils experimented upon. As the author expected, the presence of valerianic acid did not influence the reaction. Pharm. Centralhalle, Feb. 16, 1871.

Test for Oil.—Flückiger prefers a modification of the sulphuric acid test, by a previous dilution of the oil to be tested with sulphide of carbon. On dissolving one drop of valerianic acid in fifteen drops of bisulphuret of carbon, adding, with shaking one drop of concentrated sulphuric acid, followed by one drop of nitric adid, sp. gr. 1.20°, an intensely blue color is produced. On testing various copaiba balsams dissolved in bisulphuret of carbon, Para copaiba gave a reddish color, a kind of Maracaibo a greenish, and a third of unknown origin a brown and blackish coloration. Gurjun balsam gave the same reaction given by valerianic acid. It is, therefore, an easy matter to distinguish this balsam from the copaibas. Arch. d. Pharm., Nov., 1870.

Detection of Carbolic Acid in Oil of Cloves.—Hager agitates the suspected oil with six or ten times its volume of benzine; pure oil of cloves yields a clear solution; carbolic acid, if present, renders the mixture turbid, and separates. Equal volumes, however, of carbolic acid, oil of cloves, and benzine, yield a clear mixture.

Carbolic acid may likewise be removed from oil of cloves by agitating it with dilute glycerin; but the separation takes place slowly, rendering repeated agitation and boiling with glycerin necessary.

Flückiger suggests to agitate 2 to 10 grammes of the oil with 50 to 100 times its quantity of hot water; after cooling, the latter is poured off, and concentrated by slow evaporation at a low temperature. To a few cubic centimeters of the aqueous solution a drop of ammonia is added, and a small quantity of good chlorinated lime sprinkled upon it; if phenol has been present, the liquid, after some agitation, will assume a green color, passing into blue, which is permanent for some days. Pure oil of cloves does not show this behavior. Amer. Journ. Pharm., Nov., 1870.

It has been observed by Flückiger that Oil of Peppermint, when mixed in the proportion of from 50 to 70 drops of the oil, with one drop of nitric acid of spec. grav. 1.20, it turns faintly yellowish, brownish, and after an hour or two exhibits a magnificent fluorescence. When examined by transparent light it possessed a beautiful blue-violet, or a greenish-blue color, and a copper color by reflected light. If the mixture is warmed, the blue or green coloration takes place more speedily, and an admixture of 5 per cent. of oil of turpentine does not prevent the color reaction. Bisulphide of carbon contributes in no way to improve the test. Lond. Pharm. Journ., Feb., 1871.

Oil of Peppermint as a Local Anæsthetic.—Dr. A. Wright communicates the use of oil of peppermint, by the Chinese, when suffering with facial neuralgia; and adds his own experience in the use of the oil as a local anæsthetic, not only in neuralgia, but also in gout, with remarkably good results. The relief from pain he finds to be almost instantaneous. From Medical News and Library, Jan., 1871.

PILLS.

Carbolic Acid Pills.—C. Lewis Diehl suggests the following formula as convenient and satisfactory:

Carbolic Acid,	1 part.
Powdered Elm Bark,	3 parts.
Gum Arabic,	1 part.

Tragacanth Paste, a sufficiency.

They may be coated with Tolu or silver leaf.

Chicago Pharmacist, Feb., 1871.

Glycerin in Pills.—The Pharm. Zeitung, No. 10, avers that pills containing glycerin cannot be silvered or gilt, inasmuch as the lustre of the coating disappears, rendering the pills unsightly. Hager (Pharm. Cent. Halle, 1871, 51) states that this occurs only with recently prepared pills, and with older pills, if prepared with an excessive quantity of glycerin. Am. Journ. Pharm., May, 1871.

To prepare Pills, containing five drops of Yellow Sandalwood, Mr. Albert E. Ebert recommends the following plan:

Take of Oil of Yellow Sandalwood,
Yellow Wax, each, . . half a troy ounce.

Melt the wax in a capsule, and weigh into it the oil of sandalwood; mix and stir until cold, then roll out the mass, and divide into 80 pills.

Oil of cubebs, and other volatile oils, may be incorporated in the same manner. Pharmacist, Dec., 1870.

Albert E. Ebert, in his Pharmacal Notes, after calling attention to various practical points of manipulation behind the prescription counter, gives an expeditious plan of extemporaneously coating pills with resin by using a solution of one part of resin in nine parts of ether. Pharmacist, July, 1870.

S. B. Turney recommends a mixture of one part of powdered tragacanth and three parts of glycerin. It acquires in a few hours a tenacious consistence, and is well adapted for forming dry powders into a pilular mass. Pharm. Journ. and Transact., 1870, xi, 424.

POWDERS.

Saccharo-Chirettine.—D. S. Kemp, of Bombay, recommends this as the most reliable and uniform preparation of chiretta, giving the following formula for its preparation:

An infusion of chiretta is made at 120°, and the coloring matter precipitated with subacetate of lead solution. To the filtrate is added a sufficiency of ammonio-acetate of lead (mixture of ammonia and acetate of lead), which precipitates the chirettine in combination with lead. The precipitate being well washed, first with ammoniacal water, then with alcohol, is treated with a mixture of sulphuric acid and alcohol, and filtered. The filtrate containing the chirettine is further treated with carbonate of lime, to remove the excess of acid. To the filtered liquid is added a proportion of sugar (20 pounds for each 60 pounds of chiretta used), and the whole dried by a gentle heat, and powdered. The author states that the quantity of bitter principle present causes quite a minute increase in the weight of the product, which is, notwithstanding, so bitter that one grain is perceptible in a gallon of water. Lond. Pharm. Journ.; Amer. Journ. Pharm., Nov., 1870.

Carbolic Acid, in powder form, containing about 20 per cent. of the acid, is recommended by Prof. Charles O. Curtman for the destruction of the various parasites infesting plants, without injury to vegetable life. The base composing the powder is clay. Amer. Journ. Pharm., July, 1871.

PLASTERS.

Caoutchouc in Plasters.—J. Willetts Worthington has treated this subject at length in an Inaugural Essay presented to the Philadelphia College of Pharmacy. He extols the addition of a solution of one ounce of pure caoutchouc in one pint of benzine (petroleum naphtha). One drachm of this liquid gum-elastic added to seven drachms of plaster, melted on a water-bath, and well incorporated, will furnish a plaster which is more adhesive, will retain its pliability with little tendency to crack, presenting a smooth, glossy appearance. Am. Journ. Pharm., April, 1871.

SOAPS.

Price's Glycerin Soap, or Solid Glycerin (London Lancet) of commerce, contains in 100 parts, according to analysis: water, 21.5; fatty acid, 29.5; soda, 3.7; and glycerin, 45.3. Arch. d. Pharm., Jan., 1870.

Castor Oil Soap.—F. M. Rimmington has prepared soap from castor oil, the physical properties of which seem to favor its use in medicine. It has a clear, yellowish-white color, is free from smell, soon becomes dry, and is easily powdered. It has no tendency to soften, or deliquesce on exposure to the air. In proof-spirit it makes a perfectly clear and colorless solution without any sediment. London Pharm. Journ., Feb., 1871.

Technical Analysis of Soap.—M. Gaston Tissandier gives in detail the determination of the normal, as well as accidental constituents of soap, viz.: fatty acids, soda, chloride of sodium, sulphate of soda, non-saponified fatty bodies, non-saponified carbonate of soda, glycerin, and water. In the estimation of fatty acids he incorporates a known quantity of wax to the separated, floating acids, which tends greatly to facilitate their separation and weighing. Chemical News, 1870.

Detection of free uncombined Caustic Alkali in Soap.—On adding (Bamberger Gewerbeblatt, 1868, p. 43) to a few drops of the dissolved soap an excess of solution of chloride of barium, if on stirring, and subsequently dipping a strip of turmeric paper into it, it turns a brown color, the presence of free caustic alkali is indicated. Wittstein's V. Jahresschr., July, 1870.

Oudemans (Journ. f. pr. Chem., cvi, 51) has concluded from a series of experiments, that by the salting of potash soap with common salt, only about one-half of the potash is replaced by soda, and, therefore, the product is a mixture of about equal parts of potash and soda soaps. Ibid.

SUPPOSITORIES.

Wm. G. Ewing suggests a modified process for the preparation of suppositories by the use of grated cacao butter, and

white wax passed through a sieve, No. 20. The grated materials, mixed in varying proportions to attain the proper consistence, are rubbed together in a mortar with the required medicaments, forming a plastic mass which is easily rolled into lengths, and divided as an ordinary pill mass, and each piece formed by the fingers into a conical shape, or, if desirable, pressed in suitable moulds previously dusted with lycopodium, as suggested by Mr. J. B. Moore. Am. Journ. Pharm., May, 1871.

A paper by F. M. Goodman, on the preparation of Suppositories, which contains many valuable and practical hints, is published in the Chicago Pharmacist of May, 1871.

In a paper on Suppositories, Chas. L. Eberle deprecates the addition of wax as a hardening ingredient to cacao butter; he finds that ten per cent. of spermaceti can be added without affecting the medicinal value of a suppository. Proc. Am. Pharm. Assoc., 1870.

SYRUPS.

In the preparation of syrups of senega, squills and ipecac, J. C. Wharton recommends the application of carbonate of magnesium, to facilitate the filtration of the liquid before adding the sugar. The author believes that the albumen and pectin bodies are thereby removed, rendering the syrups clear and transparent, and less liable to ferment. Am. Journ. Pharm., March, 1871.

Syrup of Ipecac.—A formula for this syrup is published by Luther E. Sale, in Pharmacist, Sept., 1870.

Syrup of Citric Acid.—Benjamin Lillard contributes the following formula:

Take of Citric Acid,	60 grains.
Water,	q. s.
Syrup,	16 fluid ounces.
Spirit of Lemon,	30 minims.

Dissolve the citric acid in the water, add the syrup and spirit of lemon, and shake well until they are thoroughly mixed.

Amer. Journ. Pharm., Nov., 1870.

Syrup of Albuminate of Iron and Soda.—Prof. Prescott publishes the following formula:

White of one Egg.	
Sugar, ...	℥ss.
Tinct. Chlor. Iron, ...	℥ss.
Solution of Soda and Water, each a sufficient quantity.	

Mix the egg with the sugar, adding water sufficient to effect the solution, add the tincture of iron, and then just sufficient soda to dissolve the coagulated albumen; finally water, *q. s.* to make one ounce.

Drug Circ., July, 1870.

Syrupus Calcis Lacto-phosphatis.—William Neergaard furnishes the following formula for this new preparation, recommended by Dr. L. Dusart:

Concentrated Lactic Acid, ...	fl. ℥j.
Magma of freshly precipitated Phosphate of Lime, .	q. s.
Aquæ Fl. Aurant., ...	fl. ℥iss.
Aquæ Puræ, ... q. s. ad.	fl. ℥viij.
Sacchari Albi, ...	℥xj. M. S. A.

No heat ought to be employed, else the syrup assumes a milky appearance.

The syrup contains between two and three grains of dry phosphate of lime in each fluid drachm, besides the lactic acid. Am. Journ. Pharm., June, 1871.

Syrups of the Phosphates.—Michael Carteighe (Pharm. Jour., London) furnishes formulæ for these much-prescribed preparations. He employs recently precipitated phosphate of iron, dried at a temperature not to exceed 100° Fahr., dissolved in syrupy phosphoric acid of specific gravity 1.500. Chicago Pharmacist, May, 1871.

Syrupus Croci.—George W. Kennedy offers the following formula for the preparation of a syrup which will not ferment during the warmest weather, by substituting glycerin for the sugar:

Saffron True, ...	½ ounce.
Glycerin, ...	2 ounces.
Water, ...	6 "

Macerate for seven days, filter into a pint bottle, and add water through the filter to make 8 oz., then add sugar 14 oz. av., and dissolve cold, by frequent agitation.

Am. Journ. Pharm., Feb., 1870.

Fruit Syrups.—In order to obtain fine fruit syrups, clear and finely colored, of agreeable taste and flavor, N. Gräger publishes the following:

For raspberry syrup reduce perfectly ripe berries to a uniform pulp, add five to ten per cent. of white sugar, and allow the whole to ferment, with occasional stirring. The alcohol which is formed while fermenting will serve not only to separate the pectin and thus facilitate the subsequent filtration, but will also communicate an additional flavor of acetic, or some analogous ether of oxide of ethyl.

For strawberry syrup, two pounds of picked strawberries are put without crushing into a wide-mouthed bottle, with two and a half pounds of pulverized sugar, and the whole shaken well together. The sugar seizes the juice, being converted into a clear, rich syrup. The berries shrink together, and are readily separated on expressing the syrup through a cloth. The addition of one-fifth of alcohol is necessary to insure its preservation. Pharm. Zeitung, May, 1870.

TINCTURES.

Tinct. of Calabar Bean.—A. E. Ebert prepares this tincture by using one part of bean to ten of liquid, the menstruum consisting of alcohol three parts, and water one part. The bean, previously reduced to a fine powder, is macerated for several days with the water, the alcohol is then added, and the whole is allowed to macerate eight days longer. The mixture is finally thrown upon a filter, and when the liquid has ceased to pass, sufficient of the alcoholic menstruum is poured upon the residue to make up the original measure. For reducing the bean to the requisite fineness, the author found a coffee-mill to answer a good purpose. The dose of the tincture is fifteen drops. Pharmacist, Dec., 1870.

Tinct. Cinchonæ Comp.—G. W. Kennedy suggests an improvement in the officinal tinct. cinchon. comp. by leaving out the red saunders. Am. Journ. Pharm., Sept., 1870.

A Formulary of Elixirs and other preparations, as adopted

by the Newark Pharmaceutical Association, is published in the Am. Journ. Pharm., July, 1871.

Ferrated Elixirs of Cinchona.—Prof. Maisch publishes in Am. Journ. Pharm., May, 1871, several formulas for elixirs.

Elixir Cinchonæ et Ferri Chloridi.—A formula is furnished by W. W. Seay, of an elixir of Peruvian bark and protochloride of iron, and published in Am. Journ. of Pharm., June, 1871.

Culinary Essences.—Prof. A. E. Ebert publishes in the Chicago Pharmacist, Jan., 1871, a full list of formulas for these flavoring extracts.

Cologne Waters.—Albert E. Ebert gives a number of formulas for the preparation of cologne waters. To obtain good results, the author states that it is essential to employ spirit free from grain or fusel oil, which should just be strong enough to hold the odorous principles in solution. The oils used should not only be pure, but fresh, as they become resinous with age, and impart a rank odor. The cologne water should not be filtered through charcoal. Pharmacist, Aug., 1870.

WINES.

Logwood coloring can be detected in adulterated wines, according to Lapeyrère, by a test-paper prepared by saturating filtering-paper with an aqueous solution of neutral acetate of copper. The genuine wine causes a gray, or rose-red gray discoloration, whilst logwood coloring produces a sky-blue discoloration of the test-paper. Drug. Circ., Aug., 1870.

Preservation of Wines.—Four years ago M. Pasteur announced that he had ascertained that wines became spoiled in consequence of the presence of microscopic organisms, which could be destroyed by exposing the wine to a temperature of 55° C. for a few moments only. A committee of experts in wines was appointed to make a comparative examination of wines which had and which had not been subjected to heat; M. Lapparent being President, and M. Dumas and M. Pasteur

assisting. They have concluded that it is impossible to deny that the preservation of wine in bottles is greatly improved by heating; that the destruction of the germ is perfect without the least impairment of the taste, color, or limpidity of the wines. Druggist's Circular, April, 1871.

MISCELLANEOUS.

Gelatinæ Medicatæ in Lamellis is a new form of medicaments introduced by Prof. Almén, of Upsala. The medicated gelatines are prepared from a solution of gelatine, with glycerin, to which morphia, opium, &c., are added. The solution is then poured upon a plain surface, and properly dried, divided into small squares, each presenting equal and proper doses of the medicines they contain. For medicated gelatines containing ferr. pulv., calomel, &c., pulv. tragacanth is used in addition to the other ingredients. Pharm. Post, Jan., 1871, No. 1 and 2.

Santonine.—Dr. Harland recommends a solution of santonine as a vermifuge by means of carbonate of sodium. The following is the formula:

℞. Santonini, in pulvere, ...	gr. xij.
Sodæ Bicarbonatis, ...	gr. xx.
Aquæ Destillatæ, ...	℥ij.

Put the soda and water into a flask, keep the fluid near the boiling-point, and add the santonine, about two grains at a time, until the whole has dissolved. Solution is effected in about half an hour, during which time the water is reduced to ℥ij, or, if not, may be reduced to that bulk, when ℥j will contain a full dose=six grains of santonine. Druggist's Circular, April, 1871.

Solution of Cantharidate of Potassium for spreading Plasters.—

Gelatine, ...	30 parts.
Water, ...	150 "
Alcohol, ...	150 "
Cantharidate of Potassium, ...	6 "
Glycerin, ...	q. s.

Cantharidate of Potassium may be obtained by dissolving 2 grammes of cantharidine in 150 grammes of alcohol, adding

to the solution 1.6 gramme of caustic potassium dissolved in a little water. The compound will separate in the form of a soft crystalline mass from which the alcohol may be removed by expression. Arch. d. Pharm., Aug., 1870.

New and harmless Pharaoh's Serpents.—A substitute for the poisonous chemical toy prepared from sulphocyanide of mercury is obtained, according to Baer, by intimately mixing two parts of bichromate of potassium, one part of nitrate of potassium, and three parts of grape sugar, pressing the mixture into cones, in suitable paper moulds. The cones must be kept from light, and preserved in a dry place, or covered with sandarach varnish. Pharm. Zeitung., June, 1871.

Hæmostatic Cotton.—A valuable discovery of Dr. Ehrle, is prepared by dipping cotton previously boiled in a solution of soda, into a solution of sesquichloride of iron. The cotton is applied in the same manner as lint, covered with a compress. It should on account of its hygroscopic nature be kept secure from moisture. Dingler's Polytechn. Journal.

Collodion Cotton saturated with a solution of permanganate of potassium, has been proposed by Prof. Böttger, and has since been used with perfect success for disinfecting offensive suppurating ulcers. Gun-cotton on which the permanganate solution has no oxidizing influence is therefore preferred to ordinary cotton. Zeitschr. d. Allg. Oest. Apoth. Vereines, Feb., 1871.

Disinfecting Cotton.—It has long been known that the best disinfecting agent for wounds, cancers, ulcers, and decaying animal matter, is the permanganate of potash. Dr. Fresenius uses gun-cotton saturated with a solution of the permanganate of potassium. The gun-cotton is not decomposed by the manganese salt, as ordinary cotton is, but seems to expose and keep the greatest amount of surface for the action of the disinfectant. Bandages of gun-cotton thus saturated can be readily applied, and in case of open wounds, cancers, and the like, must prove very acceptable to surgeons. Journal of Applied Chemistry.

Disinfectants.—The Chemical Society of Berlin have, through a committee, published a list of the most approved disinfectants, and the degree of concentration for application.

Permanganate of Potassium.—One part of the pure salt dissolved in 100 parts of water. Where the crude material is used, 5 to 10 parts to 100 of water will suffice. This disinfectant acts upon liquids and has little action on solids.

Carbolic Acid Water is obtained by dissolving one part of the pure crystallized carbolic acid in 100 parts of water. Crude carbolic acid ought to be taken in double the quantity.

Carbolic Acid Powder is prepared by mixing 100 parts of peat, gypsum, earth, sand, sawdust, or charcoal powder with one part of carbolic acid in powder.

Carbolic Acid Wash.—Mix one part carbolic acid with 100 parts milk of lime.

Chloride of Lime.—One part in 100 parts of water.

Suevern's Mass is composed of 100 parts slaked lime, 15 parts coal tar, and 15 parts chloride of magnesium in water. From Journ. Appl. Chem., Chicago Pharmacist, Jan., 1871.

Rubber Tubing which has become hardened, may be restored by soaking in glycerin. Pharm. Zeitung., June, 1871.

To prevent the formation of mould in mucilage of gum arabic, the addition of a small quantity of sulphate of quinia is praised. Ibid.

A *Styptic Paper* used in Paris, is prepared by dipping paper in a decoction of 1 lb of benzoin and 1 lb of alum in 4 gallons of water, which has been kept boiling for 4 hours with renewal and skimming. The paper is left in the filtered solution for some time until saturated; it is then dried and painted over with a solution (neutral) of chloride of iron; this is then dried, folded and wrapped in an impervious cover. Med. Archives. Amer. Journ. Pharm., Nov., 1870.

Water may be kept from becoming putrid, according to Runge, by keeping it in sheet-iron tanks or by putting a few pieces of iron into wooden tanks or barrels. The iron removes the dissolved oxygen by combining with it, and thus prevents putrefaction. Drug. Circ., July, 1870.

Tannin and Glycerin Pencils.—Dr. Schuster proposes the use of tannin mixed with glycerin, as a substitute for caustic injections. This material is at first waxy, but soon becomes hard, and it melts in moist situations at the temperature of the body. From Lancet. London Pharm. Journ., Oct., 1870.

Cure for Warts.—The best cautery for warts is said to be dichloracetic acid. It must be applied on the sharp point of a stopper made for the purpose, and great caution ought to be observed not to use too much of it, as it will burn a deep hole into the flesh. One application is frequently sufficient to drive away a wart. Scientific American.

Solvent for Ear-Wax.—After a series of experiments made by Dr. Petrequin, of Lyons, in which he tried successively olive oil, glycerin and oil, alcohol and olive oil, olive oil and oil of turpentine, ether, alkaline solutions, soap and water, chloroform, sulphuret of carbon, &c., he has arrived at the conclusion that the old remedy of tepid water is the best for that purpose. London Pharm. Journ., Nov., 1870.

Condensed Milk.—L. Kofler publishes the result of a chemical examination of four different articles of condensed milk of commerce, in Vierteljahresschrift für praktische Pharmacie. Amer. Journ. Pharm., Sept., 1870.

Substitute for the Stomach-Pump.—John T. Hodgen, M.D., recommends an India-rubber tube, four feet long, attached to a stomach-tube, to be used as a syphon, by simply filling both with water, compressing the elastic tube between thumb and finger to keep the fluid from running out, introducing the stomach-tube, and then lowering the outer end of the elastic tube below the level of the stomach, when the contents of the stomach will pour out as readily as from an open vessel. The action can be reversed, and the stomach filled with water by dipping the outer end of the elastic tube beneath the surface of water, and elevating the vessel containing it. St. Louis Med. Journal. Amer. Journ. Pharm., Sept. 18, 1870.

Electrodeposition of Copper and Brass on Iron.—An interest-

ing account of this art is published by W. H. Walenn, in Chem. News, and Drug. Circ., Sept., 1870.

Deposition of Gold on Glass.—Böttger has modified Wernicke's process for throwing down gold on glass, as follows: He prepares the soda solution by dissolving 6 grms. caustic soda in 100 c.c. of water; the reducing fluid to be made when washed, by dissolving 2 grms. of glucose in 24 grms. distilled water, and adding 24 c.c. alcohol of 80 per cent.; 24 c.c. of aldehyde, of 0.870 sp. gr.; neutral solution of chloride of gold, 1 grm. of gold in 1.200 c.c. of water.

Four volumes of the gold solution are mixed in a suitable vessel with one volume soda solution, and one-sixteenth volume of the reducing liquid, and the liquid rapidly poured into the hollow glass globe to be plated. Five minutes is sufficient to insure a thin deposit of gold, although it is better to allow more time. Flat plates of glass can be laid upon the surface of the liquid. When the baths are heated the deposit of gold takes place more rapidly, but not so fine. Drug. Circ., Nov., 1870.

M. Pushec gives formulæ for metallic solutions, to produce various fancy colors and hues on metallic iron, copper, and other metals. Drug. Circ., July, 1870.

To stain light-colored wood a walnut color, apply a warm and concentrated solution of permanganate of potassium; rinse and varnish when dry. Arch. d. Pharm., Aug., 1870.

To restore the white color of flannel which has turned yellow, Prof. Artus recommends to steep it about an hour in a weak solution of bisulphite of sodium, adding after that, with stirring, dilute muriatic acid (1—50); covering the vessel, and allowing it to stand about a quarter of an hour; rinse well. Pharm. Centralhalle, March, 1871.

Bleaching Ivory.—The objects to be bleached are first placed into a solution containing 8 oz. of crystallized carbonate of sodium in 30 oz. of water. After being left in this fluid for two days, they are well washed in pure water, and then immersed into a solution composed of 11 oz. of hyposulphite of sodium, and 30 oz. of water, for five days; after which there is added to the liquid yet con-

taining the ivory objects, 7 drachms of hydrochloric acid, diluted with 3½ oz. of water. Then cover the vessel (glass or porcelain) for from 24 to 36 hours; after which time the ivory is taken out, washed in clean water and dried. The quantities of ingredients specified suffice for about 18 oz. of ivory. Les Mondes, June 30, 1870.

Silvering Ivory.—Immerse a small slip of ivory in a weak solution of nitrate of silver, and let it remain till the solution has given it a deep yellow color; then take it out, and immerse it in a tumbler of water, and expose it in the water to the sun's rays. In about three hours the ivory acquires a black color; but the black surface, on being rubbed, soon becomes changed to brilliant silver. Scientific American.

Explosive Agents.—An article on explosive agents with reference to the modifications in the degree of rapidity and force of the explosion by variation of the circumstances under which it takes place, &c., is published in Druggists' Circular, July, 1870.

Ammonia Gunpowder.—The owners of the Nora-Gyttorp Powder Mill, Sweden, have brought out a new kind of powder, which contains, it appears, a mixture of nitrate of ammonium and nitrate of potassium (with what other substances is not said). This material is, according to some accounts, a more powerful explosive than nitro-glycerin, and cannot be ignited, or made to explode, but by the impact of a blow, or a falling weight, or by the detonation of a small cartridge containing common gunpowder. From Chemical News, Lond., Feb., 1870.

Dualin is the name of a new explosive compound, burning without explosion in the open air, but exploding when confined, with from four to ten times the power of ordinary gunpowder, and consisting of cellulose, nitro-cellulose, nitro-starch, nitro-mannite, and nitro-glycerin, mixed in different proportions according to the degree of strength desired for different purposes. Its inventor is Carl Dittmar, of Charlottenburg, Prussia. A detailed account of its manufacture is published in Drug. Circ., July, 1870.

Inflammable Mixtures.—On adding a little ammonia to mixed

solutions of phosphorus in chloride of sulphur, and one in bisulphuret carbon, a lively deflagration is produced.

If a glass vessel containing benzine and a globule of potassium is broken under water, the combustion of the metal will ignite the benzine floating on the surface of the water. From Pharm. Journ. and Transact., Sec. Ser., vol. xi; Arch. d. Pharm., Juli, 1870.

Repairing of cracked Porcelain Vessels.—Dr. Waltl recommends, first to dry the vessels thoroughly in a drying-stove, and next to fill them with a rather concentrated solution of silicate of sodium, and leave the solution in the vessel for about twenty-four hours. After the liquid has been poured out, the vessel is gradually dried at a gentle but increasing heat, and it will then be found to hold liquids again, and be fit for further use. From Chemical News; Dental Cosmos, Jan., 1871.

Steel Files for cutting Glass.—An old, three-cornered file, ground to a three-cornered point, heated red hot, and hardened by plunging it into a mixture of snow and common salt, will, when finally retouched on the stone to remove the scale, cut glass with facility. When used the file should be held nearly perpendicular, somewhat inclined forward. When the point becomes dull from use, it will only scratch, and will then need regrinding. Dental Cosmos, Feb., 1871.

To cut or bore Glass.—Any hard steel tool will cut glass with great facility, when kept freely wet with camphor dissolved in spirits of turpentine. A drill-bow may be used, or even the hand alone. A hole bored may be readily enlarged by a round file. The ragged edges of glass vessels may also be thus easily smoothed by a flat file. Flat window glass may readily be sawed with a watch spring saw by aid of the solution. In short, the most brittle glass can be wrought almost as easily as brass by the use of cutting tools kept constantly moist with camphorized oil of turpentine. Ibid.

Water-proof paper may be prepared as follows: Dissolve one part of Japanese wax in six parts of hot alcohol, and shake until cold. The paper having been previously coated with a

mixture consisting of equal parts of starch paste and glycerin, is then coated with emulsion of wax, and the coating smoothed down uniformly with a brush. Chem. Centralbl., 1870, p. 687.

Water-tight Paper.—Scoffern proposes to prepare a water-tight paper by passing the endless sheet in the mill, at a proper velocity, through an ammonio-copper solution, and afterwards drying and pressing. Drug. Circ., Nov., 1870.

Water-proof Compound.—Dr. Scherzer, an Austrian official at Pekin, has sent to his government some specimens of a Chinese composition called "Schioicao," which has the property of making wood and other substances perfectly water-tight. Cardboard, when covered with the composition, becomes as hard as wood, and wooden buildings in Pekin have a coating of it. It consists of three parts of blood, deprived of its fibrin, four of lime, and a little alum. Scientific American.

For rendering textile fabrics incombustible, Patera of Vienna extols a mixture of borax and sulphate of magnesium, also a mixture of sulphate of ammonium and sulphate of calcium. Pharm. Zeitung, Mai, 1871.

Sponge Paper is a new material, made by Gustin & Co., of Paris. It is prepared by adding to paper material, previous to its conversion into paper, a pulpy preparation of sponge. It is a powerful absorbent of moisture, and is as such recommended as a surgical dressing. Zeitschr. d. allg. œst. Apoth. Vereins, Jan., 1871.

Stains.—To remove those of grass, grape juice, and the like, from white garments, dampen the spot, and hold it over the fumes of a lighted sulphur match. Dental Cosmos, Jan., 1870.

Glycerin Cement.—Prepared by mixing glycerin with litharge reduced to an impalpable powder by elutriation. It is recommended for cementing metals, will harden as well under water and other liquids as in air, and will fully bear a temperature of 527° Fahr. It is particularly adapted for luting chemical and technical apparatus, and is capable of withstanding the vapors of Cl,HCl,S,SO_2,NO_5, &c. Also alcohol, ether, CS_2, &c.,

whether in the liquid state or in vapor. Polytechn. Centralblatt, 1870, 5, 719.

Cement for Knife Handles.—The best cement for this purpose consists of one pound of colophony and eight ounces of sulphur, which are to be melted together, and either kept in bars or reduced to powder. One part of this powder is to be mixed with half a part of iron filings, fine sand or brickdust, and the cavity of the handle is then to be filled with this mixture. The stem of the knife is then to be inserted in the cavity, and when cold will be found fixed to its place with great tenacity. Druggists' Circular.

Liquid Cement.—For cementing glass, crockery, wood, &c., the following compound is recommended: Six parts of glue, in small pieces, are macerated for several hours in sixteen parts of water; one part of hydrochloric acid and one part and a half of sulphate of zinc are then added, and the mixture is exposed for ten or twelve hours to a temperature of 68° to 70° C. Pharm. Cent. Halle.

An Excellent Cement for fastening caoutchouc to wood or metal surfaces is made by dissolving shellac in ten times its weight of ammonia. Pharm. Zeitung, Jan., 1871.

A Cement of superior adhesive quality for wood, pasteboard, porcelain, glass, marble, &c., is prepared, according to A. Selb (Pharm. Centralhalle), by intimately mixing 2 parts of nitrate of calcium, 20 parts of gum arabic, and 25 parts of water. The nitrate of calcium is prepared by dissolving pieces of marble in nitric acid of 25 per cent., keeping the marble in excess, in order to precipitate any dissolved oxide of iron. Pharm. Zeitung, May, 1871.

Gutta-percha Cements.—For uniting sheet gutta-percha to silk or other fabrics:

Gutta-percha,	40 lbs.
Caoutchouc,	3 "
Shellac,	3 "
Canada Balsam, or Venice Turpentine,	14 "
Liquid Styrax,	35 "
Gum Mastic,	4 "
Oxide of Lead,	1 "

For uniting sheet gutta-percha to leather, as soles of shoes, &c.:

Gutta-percha,	50 lbs.
Venice Turpentine,	40 "
Shellac,	4 "
Caoutchouc,	1 "
Liquid Styrax,	5 "

In making these cements the Venice turpentine should be first heated; then the gutta-percha and the shellac should be added; the order in which the other materials are added is not important. Care should be taken to thoroughly incorporate them, and the heat should be cautiously regulated, so as not to burn the mixture. From Scientific American. Dental Cosmos, June, 1871.

Lute for Corks, &c.—Anthracene acts capitally as a substitute for paraffine (either by itself or mixed with the latter) in covering corks or joints of apparatus requiring to stand a comparatively high temperature. A luting of anthracene is capable of standing a high pressure and temperature combined for a lengthened period. Chemical News. Dental Cosmos, May, 1871.

Colored Cements.—Prof. R. Böttger extols a solution of silicate of sodium of 33° Baumé, thickened with whiting and suitable coloring matter to form a plastic mass, which will harden in from six to eight hours. It is useful for chemical and industrial use, and is susceptible of a fine polish. N. Jahrb. für Pharm., Aug., 1870.

Paste.—It is said (Am. Artisan) that caseine dissolved in cold saturated solution of borax will produce a viscid liquid more adhesive than gum, and in many cases forming an efficient substitute for strong glue. Dental Cosmos, Feb., 1871.

Paste that will keep.—Take 1 tablespoonful of flour, add gradually 1 pint of cold water, boil slowly, and stir well to prevent burning, until it thickens; keep it boiling till it becomes thin, then add 1 teaspoonful of nitro-muriatic acid, and boil till it again thickens, when it is ready for use. This paste is harmless, cheap, and will neither turn sour nor mould. From Scientific American. Dental Cosmos, June, 1871.

Composition for Gumming Labels.—Facilides (Weinlaube, 1870, No. 20) macerates 5 parts of white glue in 18 to 24 parts of water for twenty-four hours. It is then heated to boiling, and 9 parts of glycerin and 3 parts of gum arabic are added. The mixture is spread while quite warm upon the paper. Zeitschr. d. allg. oest. Apoth. Vereines, March, 1871.

Gold Lackers.—F. R., of Mass., gives the following recipes in the Scientific American: Deep gold lacker: 3 ounces seed lac, 1 ounce turmeric, $\frac{1}{4}$ ounce dragon's blood, 1 pint alcohol. Gold lacker: 1 pound ground turmeric, $1\frac{1}{2}$ ounces gamboge, $3\frac{1}{2}$ pounds gum sandarac, $\frac{3}{4}$ pound powdered shellac, 2 gallons rectified spirits of wine, 1 pint turpentine varnish. Digest for a week, frequently shaking the mixture, then decant and filter. Brass color: 1 ounce gamboge, 3 ounces Cape aloes, 1 pound pale shellac, 2 gallons rectified spirits. Dental Cosmos, Feb., 1871.

Colorless Lacker.—Dissolve $2\frac{1}{2}$ ounces of shellac in 1 pint of rectified spirits of wine, boil for a few minutes with 5 ounces of well-burned and recently heated animal charcoal. A small portion of the solution should then be filtered, and if not colorless, more charcoal should be added. When all color is removed, press the liquid through a piece of silk, and filter through paper. Ibid.

A Varnish for lackering pictures and engravings, as well as for preserving dried plants and flowers, is prepared by dissolving 10 ounces of gum sandarac, 4 ounces of mastic, and half an ounce of camphor in 3 quarts of strong alcohol. Plants coated with this varnish will be protected from destruction of insects, and will retain their colors fresh and unchanged. Ibid.

Lacker for Engravings.—A varnish much employed for that purpose in Paris, consists of a solution of 2 parts damarr resin in 5 parts turpentine. The mixture should be well shaken before it is applied. Pharm. Centralhalle, March, 1871.

A Varnish useful for paper surfaces, which will resist the action of oils and alcoholic liquids, is furnished by collodion, to which $\frac{1}{32}$ part of castor has been previously added. Ibid.

To prevent the tarnishing of metallic surfaces, Puscher recommends a coating made of 1 part of paraffine dissolved in 3 parts of petroleum, wiping off the excess.

Wax Varnish.—Herman Koch recommends a solution of wax in bisulphide of carbon as a convenient varnish for preparing wax paper, coating statuettes, and other practical purposes. Drug Circ., Oct., 1870.

Anti-rust Varnish.—A good drying linseed oil may be prepared without the usual process of boiling, by adding to old linseed oil 2 per cent. of its weight of manganese borate, stirring and heating by means of a steam bath to 100° or 110°. Drug. Circ., Dec., 1870.

To fasten Leather on Iron or Steel.—Dr. Carl W. Heinischen, of Dresden, gives the following recipe for the above purpose: spread over the metal a thin, hot solution of glue; soak your leather with a warm infusion of gall-nuts before placing on the metal, and leave to dry under an even pressure. If fastened in this manner it is impossible to separate the leather from the metal without tearing it. (Sci. Amer.) Dental Cosmos, April, 1871.

Articles of Silver that have become blackened by sulphur, may be cleansed best by immersing them in ammonia in which a rod of zinc has been inserted. The process is particularly applicable in filigree work where a mechanical application is impossible. Ibid.

To prevent the Cracking of Wooden Taps and Faucets.—Put the taps and faucets into melting paraffine, and heat them there at a temperature of 212° F., until bubbles of air cease to escape from the wood. The whole is then allowed to cool to about 120° F., when the taps are taken from the bath and cleaned from the adhering paraffine by rubbing with a dry, coarse piece of cloth. (Drug Circ.) Ibid.

Liquid Cement.—A solution of one part of amber in one and a half parts of bisulphuret of carbon, will furnish a good and rapidly drying cement. Arch. d. Pharm., July, 1870; from Pharm. Journ. Trans., 1869.

II. PHARMACEUTICAL CHEMISTRY.

CHEMISTRY OF INORGANIC BODIES.

NON-METALLIC ELEMENTS.

OXYGEN.

M. Delaurier states that, when manganate of calcium is heated, oxygen is abundantly given off, and that by means of this salt it may be made very economically. Druggists' Circular, March, 1871.

Ozone.—According to Jouglet, nitro-glycerin will explode in vessels containing ozone. Dynamite, iodide of nitrogen, chloride of nitrogen, and various other analogous combinations behave similarly. Pulverized picrate of potassium decomposes gradually under the same circumstances, and gunpowder will also change materially on being exposed to the action of ozone for six weeks. Comp. Rend., l. 70, p. 539.

Ozone.—Prof. Mantegazza made the important discovery that in the oxidation of the essences of odoriferous plants, large quantities of ozone are evolved, the development taking place in the greater number of cases under the direct rays of the sun only, although, in some cases, he found the action, begun in solar light, to continue in darkness. Among the plants which largely develop ozone in sunlight, are named cherry laurel, clove, and lavender; among flowers, the narcissus, hyacinth, and mignonette; among perfumes similarly exposed, eau de cologne, oil of bergamot, and some aromatic tinctures. Flowers destitute of perfume are said not to produce ozone. The Professor therefore recommends the cultivation of odorous herbs and flowers in marshy districts and places infected with animal emanations. Pharm. Journ. and Amer. Journ. Pharm., November, 1870.

Antozone.—This body, hitherto considered a modification of ozone, and supposed to be generated simultaneously with the

latter from oxygen, has been made the subject of elaborate research on the part of Engler and Nasse, who now announce that the antozone of Schoenbein is a substance possessing all the reactions of peroxide of hydrogen. Pharm. Centralhalle, März, 1871.

HYDROGEN.

Cheap Method of Producing Hydrogen.—MM. Tessie du Mothay and Marechal, who proposed the preparation of oxygen for illuminating purposes, &c., from manganate of sodium, have discovered a cheap practical method for obtaining hydrogen in large quantities, depending upon the decomposition of water by carbon and heat. When alkaline or earthy hydrates are mixed with charcoal, coke, &c., and heated to a red heat, the water of hydration is decomposed, giving off carbonic acid and hydrogen: $2CaO,HO+C=2CaO+CO_2+H_2$. The CO_2 can be removed by suitable absorbents. The hydrates can be employed indefinitely, provided the residue is moistened each time with water, so as to reproduce the original hydrates. From Jour. Soc. Arts., Chicago Pharmacist, February, 1871.

Metallic Hydrogen.—The researches of Graham having already demonstrated the metallic nature of hydrogen in the formation of an alloy with palladium, further proof of this has been elicited by experiments of Dr. Loew who succeeded in forming an amalgam of hydrogen with mercury. He takes an amalgam composed of not more than 3 or 4 per cent. of zinc, and shakes it with a solution of the bichloride of platinum; the liquid becomes black and a dark powder settles to the bottom. The contents of the flask are then thrown into water and hydrochloric acid is added to dissolve the excess of zinc. The amalgam of hydrogen and mercury at once forms in a brilliant voluminous mass, resembling in every way the well-known ammonium amalgam. It is soft and spongy, and decomposed rapidly, but without any smell of ammonia. The hydrogen escapes and soon nothing but pure mercury is left in the dish. This would also throw some doubt upon the existence of ammonium amalgam, which may be nothing more than the hydrogen amalgam,

as the smell of escaping ammonia during the decomposition of the former may probably be traced to some other source. Scientific American. Pharmacist, Sept., 1870.

Peroxide of Hydrogen is prepared according to V. Kletzinsky (Pharm. Post, Wien, März, 1870), by intimately mixing 170 grammes of cryst. caustic baryta (BaO, HO+8HO) with 30 grammes of chlorate of potassium (KO, ClO_5), and melting the mixture with a gentle heat. From the cold and pulverized mass, the chloride of potassium is removed by means of cold distilled water, and the residue of 80 grammes of peroxide of barium treated with 250 cubic centimetres of distilled water in which 80 grammes of glacial phosphoric acid have been previously dissolved by the aid of heat. The solution of meta-phosphoric acid must only be used when cold, and the mixture kept cool for twelve hours by means of ice, after which time the supernatant liquid (the oxygenated water of Thenard), about 200 cubic centimetres may be drawn off. Arch. d. Pharm., Juni, 1870.

Peroxide of Hydrogen is recommended by C. Sauer for the bleaching of discolored teeth. He employs a weak alkaline solution prepared from peroxide of barium by means of oxalic acid. The addition of a little ether will preserve it from change. Pharm. Centr. Halle, Feb., 1871.

Peroxide of Hydrogen in Atmospheric Air. H. Struwe (Compt. Rend., lxviii, 1551), arrived from his experiments on this subject to the following conclusions:

1. Peroxide of hydrogen is formed in atmospheric air together with ozone and nitrate of ammonium.

2. These bodies exist there in certain relative proportions.

3. The change effected on iodized starch-paper by the air, is owing to ozone and peroxide of hydrogen.

4. Peroxide of hydrogen itself is incapable of decomposing iodide of potassium.

5. Iodide of potassium is decomposed by carbonic acid.

6. In the presence of carbonic acid and peroxide of hydrogen, iodide of potassium is converted into carbonate of potassium and free iodine.

7. The most delicate reagent for the detection of traces of peroxide of hydrogen is oxide of lead, which is converted into the brown peroxide.

To detect peroxide of hydrogen in rainwater, the author adds to 100 c.c. of the water three drops of a solution of oxide of lead in liquor potassæ. Should the solution remain clear, a few drops of a dilute solution of subacetate of lead are also added. A slight precipitate is observed to form, which is to be collected on a filter. The precipitate is either white or yellowish, and will, when brought in contact with a drop of starch-paste and iodide of potassium, with the addition of a drop of acetic acid, if necessary, produce a blue coloration. Wittstein's Vierteljahresschr., Oct., 1870.

NITROGEN.

Preparation of Pure Nitrogen.—An easy process is suggested by Karl Knapp, by boiling equivalent solutions of nitrite of potassium (85 parts), and chloride of ammonium (53.5 parts). Arch. d. Pharm., Dec., 1870.

Nitrogen obtained from Air.—According to Berthelot, cover with sufficient ammonia copper turnings placed into a large bottle, cork and set aside a day or two. The oxygen of the air is absorbed, forming ammonio-oxide of copper, while pure nitrogen remains. Bull. Soc. Chim., 13.

Nitrogen may be readily obtained, according to Levy, by heating bichromate of ammonium in a retort, the green sesquioxide of chromium remaining: $NH_4O, 2CrO_3=Cr_2O_3+4HO+N$. Pharm. Journ. and Transact., Nov., 1869.

Action of Nascent Hydrogen upon Nitric Acid.—As the result of experiments, E. Bourgoin communicates that nitric acid, when acted upon by nascent hydrogen, gives rise to the formation of nitrous acid, deutoxide of nitrogen, nitrogen, and ammonia. The production of nitrous acid is illustrated by NO_5, $2H_2O_2+H_2=NO_3+3H_2O_2$. Bull. Mens. Soc. Chim., June, 1870.

Origin of Nitric Acid in potable water.—C. Ekin found nitric acid in the water of a spring, which was very remote from any

agency that could impart to it decaying animal matter. On closer examination it was found that the water had passed through a fossiliferous stratum. Drug. and Chem., Feb., 1871.

New Method for the Preparation of Anhydrous Nitric Acid.—H. Sainte Claire Deville obtained the anhydrous acid in 1847, by the action of dry chlorine upon nitrate of silver. Later, Gerhardt had shown that by the action of chlorine upon the dry salts of organic acids, the anhydrides of monobasic acid were formed; for instance, by the decomposition of chloracetyle and acetate of potassium, the anhydride of acetic acid was obtained.

Odet and Oignon following Gerhardt's method, subjected nitrate of silver to the action of oxychloride of phosphorus, and obtained a chloride of nitric acid NO^4Cl, which is decomposable by water into nitric and hydrochloric acid. If the vapors of this chlorinated nitric acid is brought in contact with dry nitrate of silver heated to 60–70° C., chloride of silver and anhydrous nitric acid are formed. The anhydride is obtained in the form of colorless prismatic crystals, is volatile in a current of carbonic acid, and is decomposed in air, and when warmed, into hyponitric acid and oxygen. Journ. d. Pharm. et de Chem., Feb., 1870; Arch. d. Pharm., Oct., 1870.

Test for Nitric Acid.—E. Reichardt, in Fresenius's Zeitschr. f. Analyt. Chem., ix, Jahrg., Hft. 2, recommends brucia as the best available test for the detection of minute quantities of nitric or nitrous acid. According to Kersting, the brucia test will discover one part of NO_5 in 500,000. The test is applicable to potable water containing this impurity, which arises from the decomposition of nitrogenous organic matter. Half a drop of the suspected water is placed upon a white porcelain plate, one or two drops of solution of brucia are added, and the concentrated sulphuric acid drop by drop. If the water contains a considerable quantity of NO_5, a red color is produced with the first drop; if no coloration is obtained, even after the addition of five drops of the acid, then no nitric acid, or a minute trace only, is present. Arch. d. Pharm., Feb., 1871.

Reduction of Nitrates by Fermentation and Putrefaction.—The reducing effect which organic substances exert upon salts

of sulphuric acid, thereby converting them into sulphurets, is well known, and frequently observed in mineral waters which have been kept for some time. Schloesing (Comp. Rend., lxvi, 237) found that salts of nitric acid are also decomposed under similar circumstances, with the disengagement of protoxide and deutoxide of nitrogen, as, for instance, tobacco-juice, and urine containing saltpetre in a state of decomposition, fermentation of the juice of the sugar beet, &c. The reduction of nitric acid is then only effected when the liquid is either neutral or alkaline. Wittstein's V. Jahresschr., July, 1870.

CARBON.

Sonorous Carbon.—According to Sidot, rods made of different charcoals and exposed to a red heat in a current of bisulphuret of carbon, the carbon of the decomposed CS_2 was deposited on the rod, while the sulphur was precipitated. The carbon had acquired the property of sounding like steel, silver, aluminum, &c., which are regarded as the most sonorous of bodies. On suspending one of these rods by a thread and striking it, a metallic sound is produced. This carbon was found also incapable of absorbing gases to any appreciable degree. Polytechn. Notitzblatt, 1870.

Animal Charcoal.—Facilides has prepared a coal very suitable for decolorizing, by saturating well-burnt wood charcoal with oleum animale fœtidum, and then gradually heating it until the oil is volatilized and charred. Arch. d. Pharm., cxci, 138.

Diamonds.—In a letter to the Mining Journal, London, Dr. Bleasdale, of Melbourne, states that diamonds of excellent quality are found abundantly in the diamond mines of Mudgee, in South Wales, Australia. Drug. Circ., July, 1870.

Preparation of Carbonic Oxide from Oxalic Acid.—To obtain the entire quantity of the carbon contained in oxalic acid as carbonic oxide, Chevrier (Compt. Rend., lxix, 138) passes the mixture of carbonic acid and carbonic oxide obtained by action of sulphuric acid upon oxalic acid through a porcelain tube, containing charcoal heated to redness. The carbonic acid is thereby

converted into double its volume of carbonic oxide. Wittstein's Vierteljahresschr., July, 1870.

Decomposition of Aqueous Solutions of Oxalic Acid.—Giov. Bizio found (Il Novo Cim. (2) i, 272) that 0.4 gram. of oxalic acid in 1 litre of water is gradually oxidized by atmospheric oxygen into carbonic acid, while more concentrated solutions are permanent. From Zeitschr. f. Chemie, ii, 52, 1870. Am. Journ. Pharm., July, 1870.

The Solubility of Oxalic Acid in Water has been tested by Nichols, who found that to every part of the acid are required 10.46 part of water, at a temperature of 14.5 c., differing somewhat from the results of Alluard. Wittstein's Vierteljahresschr., xix, 563.

Generation of Hydrocyanic Acid by direct Synthesis.—Berthelot having previously successfully prepared acetylene $= C_4H_2$, by the direct union of its elements (Wittstein's Vierteljahresschrift, xii, 244, 247; xvi, 418), announces (Journ. de Pharm. et de Chim., 1869, ix, 283) that on adding to acetylene nitrogen, and passing through the mixture of the gases electric sparks, the characteristic odor of the acid is perceived, and on shaking with potassa, cyanide of potassium is formed. The formation of hydrocyanic acid is accomplished acording to the following equation: $C_4H_2+2N=2C_2NH$. Wittstein's Vierteljahresschr., July, 1870.

Bisulphide of Carbon.—Experiments made by Sedot prove that a full red heat is the best temperature for obtaining the largest quantity of sulphide of carbon from a given weight of sulphur and charcoal. To purify the bisulphide, the raw product is redistilled, and then shaken with metallic mercury, which, by formation of sulphide of mercury, removes the free sulphur. Sulphide of carbon thus purified is free from fetid odor, and exhibits the smell of ether. Drug. Circ., Aug., 1870.

Inodorous Sulphide of Carbon.—M. Cloez purifies bisulphide of carbon by leaving it twenty-four hours in contact with powdered corrosive sublimate, with agitation. It is then carefully decanted and distilled from a little inodorous fat, with the aid

of a water-bath. The sulphide, when purified in this manner, has an ethereal odor, and is suitable for the extraction of odorous oils, &c. Med. Press. Drug. Circ., July, 1870.

Action of Sunlight upon Bisulphide of Carbon.—O. Loew has made the observation that bisulphide of carbon is decomposed by sunlight, with the production of a yellow color, and the subsequent deposit of a brown body. When the decomposition is allowed to proceed in the presence of water, formic acid is generated: $2CS_2+4HO=C_2HO_3,HO+2HS+2S$, the liberated sulphur being held in solution by the excess of bisulphide of carbon. The brown body possesses all of the chemical characteristics of sesquisulphide of carbon, previously described by the author. From Pharm. Centralhalle.

Action of Anhydrous Sulphuric Acid on Bichloride of Carbon.—According to Schuetzenberger, a solution of anhydrous sulphuric acid in bichloride of carbon (C_2Cl_4) will eliminate, when heated, phosgene gas (CO Cl), and the fuming liquid which remains, when heated to 75° C., gives off perchloride of carbon (C_4Cl_6). At 130° C. the whole of the residual liquid which distils over, is composed of S_2O_5Cl, and is decomposed by the action of water into HCl and SO_3.

On mixing the solution of SO_3 in C_2Cl_4 with benzine ($C_{12}H_6$), heating to 100° C., and treating the product of the reaction with water, sulpho-benzine, sulpho-carbolic acid, and some benzoic acid are generated. Compt. Rend., lxix, 352.

Tetrabromide of Carbon.—This compound was lately discovered by Bolas and C. E. Groves. It can be prepared by several processes. 1. By heating bisulphide of carbon in a sealed tube with bromide of iodine. 2. By digesting bromopicron (CBr_3NO_2) with bromide of iodine, in a flask furnished with a condensing tube. 3. By heating bromoform ($CHBr_3$) with bromide of iodine in a sealed tube. The product is obtained in a pure state by distillation. It is a white substance, crystallizing in plates, melting at 91° C., of an ethereal odor and sweetish taste, insoluble in water, soluble in ether, alcohol, bisulphide of carbon, chloroform, bromoform, benzole, and petroleum. Lond. Pharm. Journ. Amer. Journ. Pharm., Sept., 1870.

Solidified Bisulphuret of Carbon.—According to the statement of O. Wartha, when CS_2 is subjected to a strong current of dry air, its temperature sinks rapidly to —17 or —18° C., and on the surface of the bisulphuret is seen to form a mass of white crystals resembling cauliflower. The liquid solidifies gradually, the thermometer remaining stationary at —12° C., as long as any of the liquid bisulphuret remains. Solid bisulphuret of carbon is comparatively permanent at ordinary temperatures, possessing a peculiar aromatic odor. It is less combustible than the liquid bisulphuret of carbon. Berichte d. deutsch. ch. Gesellsch. Jahrg. 3, No. 2. Arch. d. Pharm., July, 1870.

Pentasulphide of Carbon.—This new combination has been obtained by Raab, by the action of sodium upon bisulphide of carbon. It appears as an amorphous, resinous, brittle mass, having a reddish-brown color, is insoluble in water, alcohol, ether, and bisulphuret of carbon, melts at 135° C., with the disengagement of a peculiar odor, and decomposes at 150° C., giving off yellow vapors of a disagreeable odor. It is soluble in caustic alkalies, liquor ammoniæ, and baryta water, forming yellow solutions. Buch. N. Repert., xix, 449.

CHLORINE.

Muriatic Acid.—Wittstein found free bromine in commercial crude muriatic acid. The acid exhibited a deep golden-yellow color, and the supernatant vapor, which had a brownish-yellow color, led to the supposition that nitrous acid was present. But on opening the bottle the odor resembled that of bromine, and litmus paper was instantly bleached. Wittstein's Vierteljahresschr, xix, 590.

Arsenic is best discovered in muriatic acid by Bettendorf's test of protochloride tin, as has been corroborated by Hager. Pharm. Centralhalle, xi, 202.

Test for Chloric Acid.—Böttger suggests Braun's test for nitric acid and nitrates (sulphate of aniline dissolved in sulphuric acid) as an equally delicate test for chloric acid and chlorates. The smallest possible trace of a chlorate introduced

into a solution of sulphate of aniline and sulphuric acid, will develop almost instantaneously a blue color throughout the mass. Journ. de Pharmacie et de Chemie.

BROMINE.

Production of Bromine in the United States.—According to Prof. Chandler, bromine is derived largely from the saline residues, at Tarentum, Sligo, and Natrona, in Western Pennsylvania; Pomeroy, Ohio; and Kanawha, Western Virginia. The product of the year 1870 will reach 125,000 lbs., a quantity probably in excess of our consumption. At present, bromine is furnished for less than $1.50 per lb. American Chemist, Aug., 1870.

Hydrobromic Acid.—H. Topsöe has found that the original method of obtaining the gaseous acid is also applicable for its preparation in solution, if amorphous phosphorus is substituted for the common. The phosphorus is placed into an alembic, covered with water, to which, by means of a separating funnel which is fitted in the cork of the alembic, the bromine is gradually added. By means of a doubly-bent tube, the alembic is connected with an absorption apparatus, consisting of three glass bulbs half filled with water, which also act as safety-valves. The best proportions are: one part of phosphorus, ten parts of bromine, and fifteen parts of water. The reaction is exemplified by: $P+5Br+8HO=5HBr+PO_5,3HO$. On distilling, the aqueous acid passes over as a colorless liquid, which increases in percentage strength of acid, as the distillation advances, and at a temperature of 125–126° C. the maximum strength is obtained, containing 48.17 per cent. of HBr. From Ber. d. Chem. Gesellsch., Mai, 1870; Arch. d. Pharm., Juni, 1870.

A new, expeditious, and safe method for the preparation of a saturated solution of Hydrobromic Acid, which is based upon the action of bromine upon paraffin, is recommended by Chompion and Pellet. Bromine in vapor is passed into paraffin contained in a retort, heated in an oil bath to 180° C., and the acid which comes over received in water. The reaction is as follows:

A portion of the bromine takes the place of the hydrogen of the paraffin, while another portion combines with the liberated hydrogen to form hydrobromic acid. After a time the addition of bromine may be interrupted, inasmuch as the bromated paraffin is decomposed at a temperature of 180° C., giving off most of its bromine in the form of hydrobromic acid. The at 0° C. saturated solution possesses a sp. gr. of 1.78, corresponding to the formula, HBr+2HO. From Wittstein's V. Jahresschr.; Pharm. Centralhalle, Jan. 5, 1871.

Preparation of Pure Bromide of Potassium.—Adrian purifies commercial bromine previous to its conversion into the potassium salt, by shaking it with water and a little ether. The chloride of bromine being easily soluble in the ether passes into solution, and is decomposed by the action of the water into hydrochloric acid and bromine. A few successive washings will serve to remove the chloride, and by shaking the bromine with dried starch paste the iodine is separated. On distilling the product bromine is obtained free from chlorine and iodine. Journ. d. Pharm. et de Chim.

Detection of Chlorine and Iodine in Bromine.—Dr. Hermann Hager furnishes a process for the detection of these impurities, which depends in the case of chlorine, upon the solubility of chlor-bromine in water, and the deportment of ether, which removes from this solution the bromine, leaving the chlorine behind as muriatic acid, and also upon the solubility of chloride of silver in a boiling solution of sesquicarbonate of ammonium, in which bromide of silver is nearly insoluble. The bromine is shaken with three times its volume of water, and the aqueous solution shaken with an equal volume of ether, the lower or aqueous layer is transferred to a test-tube, and boiled until the ether is volatilized, then treated with nitrate of silver, and the precipitate dissolved in a boiling solution of sesquicarbonate of ammonium. After cooling and decantation, the clear ammoniacal liquid is to be evaporated to a small volume, and finally supersaturated with nitric acid, when, if the bromine is contaminated with chlorine, chloride of silver is separated.

For the detection of iodine 4—5 c.c. of the water obtained by shaking with suspected bromine is mixed in a narrow reagent

glass with about an equal volume of ether, and the two liquids well shaken together, until the lower aqueous layer becomes colorless. A gentle heat is then carefully applied to evaporate the ether with occasional shaking, in which case the aqueous solution will assume a yellow or brownish hue if iodine is present. When the ether has become completely volatilized, a moistened slip of starch paper may be by means of a cork suspended over the heated liquid. The reaction depends upon the solubility of brom-iodine in water and ether, and the facility with which the bromine is volatilized with the vapor of ether. Pharm. Centralhalle, April 2, 1871.

Preparation of Bromide of Sodium.—Castelhaz prepares it pure and in large quantities, as follows: Bromide of ammonium is first prepared, which is then purified by crystallization from the easily soluble iodide of ammonium; it is then decomposed by an equivalent quantity of caustic or carbonate of soda, which, of course, must be free of hydrochloric and sulphuric acid. The solution yields, on evaporation, small cubes of anhydrous salt. To prepare the bromide of ammonium, bromine is added very gradually to diluted ammonia. The ensuing reaction develops much heat, which may cause ammonia and bromine to volatilize with the escaping nitrogen. The combination, therefore, is effected in a series of Woolfe's bottles of stoneware. The Druggists' Circular.

Iodine from Chili Saltpetre (*Nitrate of Sodium*).—According to Dr. A. Lachmann, 40 kilos of iodine are obtained at Tarapaca, Peru, from the mother-liquors from the refining of the crude nitrate of sodium, the iodine being precipitated in the free state as a blackish colored precipitate, by the careful addition of a mixture of sulphurous acid and bisulphite of sodium. The inventor of this process, named Thiercelin, has recently found that, instead of using sulphurous acid, it is more advantageous to employ nitrous acid obtained in the shape of nitrite of potassium, by the ignition of 1 part of charcoal with 5 parts of nitrate of potassium; the nitrite yields, when mixed with the mother liquid, a precipitate containing 80 per cent. of iodine. The crude iodine is refined by sublimation. From Chem. News, London, November, 1870; Am. Journ. Pharm., Jan. 1871.

The most delicate test for iodine in the soluble iodides, is the galvanic current, the iodine appearing at the positive pole. P. I. Maier finds that a solution of permanganate of potassium is as sensitive as the galvanic test. The reagent is prepared by dissolving pure crystallized permanganate in a sufficient quantity of distilled water, until a thin layer of the dilute solution assumes a red color free from the usual violet tint. This solution, when added to a solution of a soluble iodide containing a little sulphuric acid and starch-paste, will cause the development of the blue iodide of starch reaction, indicating $\frac{1}{1\,000,000}$ths of iodine. Nieuw Tijd Schr. voor d. Pharm. in Nederl., 1870.

Topsöe has furnished the following tables, on the percentage of hydriodic acid, and equivalent weights contained in solutions having determined specific gravities:

Temperature.	Specific Gravity.	Percentage.	Equivalents.
12.° C.	1.708	57.74	221.7
13.7°	1.706	57.64	222.1
12.5°	1.703	57.42	222.9
13.°	1.696	57.28	223.5
13.7°	1.674	56.15	228.0
14.°	1.630	53.93	237.3
12.5°	1.603	52.43	244.2
13.°	1.573	50.75	252.2
13.5°	1.542	49.13	260.5
13.°	1.528	48.22	265.5
13.°	1.487	45.71	280.0
13.°	1.451	43.39	295.0
13.°	1.413	40.45	313.6
13.°	1.382	38.68	330.9
13.°	1.347	36.07	354.8
13.°	1.309	33.07	387.1
13.5°	1.274	30.20	323.9
13.5°	1.254	28.41	450.6
13.8°	1.225	25.86	494.9
13.8°	1.191	22.63	565.6
13.5°	1.164	19.97	641.0
13.5°	1.126	15.73	813.8
13.5°	1.102	13.09	977.6
13.°	1.095	12.21	1048.3
13.5°	1.077	10.15	1261.0
13.5°	1.053	7.019	1823.7
13.5°	1.017	2.286	5545.6

The strongest hydriodic acid attainable by distillation, contains 57.75 per cent. of acid, and boils at 127° C. Ber. d. deutsch. Chem. Gesellsch., 111, 402.

Iodide of Cyanogen in Iodine.—This impurity has been observed previously in iodine by Scanlan, F. Meyer, and Klobach. M. Semenoff estimated the amount of iodide of cyanogen contained to the amount of 28.75 per cent., in some iodine examined in the laboratory of Prof. Wittstein, as follows: Ten grains of the iodine was triturated with sixteen grains of metallic mercury and alcohol until combination was effected. The dried green iodide was mixed in a beaker glass with an ounce and a half of water, then transferred to a tared filter, and the precipitate washed and dried at 50° C. The amount of iodide of cyanogen present was estimated from the loss sustained. Zeitschr. d. allg. oest. Apoth. Vereines, June, 1871.

Pure Iodate of Potassium is best prepared, according to Stas, by heating in a retort, placed upon a sand-bath, a mixture of equal equivalents of chlorate of potassium and iodide of potassium, at the fusion-point of the chlorate. The chloride is extracted by cold water, and the residue repeatedly crystallized from hot water. Neues Jahrb. f. Pharm., Mai and Juni, 1869.

Detection of Iodine and Bromine.—Hager describes a curious behavior of these halogens to solvents. Bisulphide of carbon agitated with bromine water acquires a yellow color, leaving the water colorless; if now iodine is added, it will be dissolved by the carbon bisulphide, the bromine passing over again to the water. This displacement of bromine by iodine, from its solution in bisulphide of carbon, occurs the more readily if the water contains a salt in solution. If solutions of bromide of potassium and ferric chloride are agitated with bisulphide of carbon, no alteration takes place, but on the addition of an iodide, the bisulphide acquires the violet color characteristic of free iodine, and ether agitated with the aqueous liquid dissolves the bromine and becomes yellow. Minute proportions of iodine (less than $\frac{1}{1000}$) cannot be detected by these methods. From Pharm. Centralhalle, 1871, 49, 50; Am. Journ. Pharm., May, 1871.

Separation of Chloride, Bromide, and Iodide of Silver.—Hager communicates, in his Pharm. Cent., Feb., 1871, a method for reciprocally separating these three haloid salts of silver, which depends upon the solubility of recently precipitated chloride of silver in a boiling solution of sesquicarbonate of ammonium, in which bromide and iodide of silver are nearly insoluble. The solution of sesquicarbonate should not contain a considerable amount of either of the mono- or bicarbonate, and is prepared by the author by dissolving 1 part of the crystalline, transparent carbonate of ammonium, in 9 parts of cold water, to which for every c.c. of the liquid 5 drops of water of ammonia, containing 10 per cent. of gaseous ammonia, are added. The manner of proceeding is to precipitate the solution previously acidulated with nitric acid with nitrate of silver, washing the precipitate by decantation, pouring upon the magma from 80 to 100 times its quantity of the solution of sesquicarbonate of ammonium; the mixture is allowed to boil about two or three minutes, allowed to settle, and the clear liquid decanted; the precipitate is boiled again with the solution of the sesquicarbonate; the clear resulting liquids are mixed, reduced to a small volume, from which after supersaturation with nitric acid, the precipitated chloride of silver is estimated in the usual way. Bromide of silver may be separated from the iodide of silver by means of a 5 per cent. solution of ammonia. Pharm. Centralhalle, Feb., 1871.

Quantitative Analysis of Insoluble Iodides.—Edward Mensel has brought forward a new method by which single and mixed insoluble iodides may be analyzed, and the metal, as well as the iodine, estimated at the same time. The process depends upon the solubility of the iodides of mercury, lead, silver, and copper in hyposulphite of soda. Sulphide of ammonium will quantitatively precipitate the metals from the liquid, while the iodine passes into the solution, which is then evaporated with caustic soda, and the residue calcined in a platina dish at a low red heat. The hyposulphite and the tetrathionate of soda are thereby decomposed with the formation of sulphite and sulphide of sodium. On dissolving the fused mass in a little warm water, adding an excess of solid perchloride of iron, the iodine which

is thereby liberated is distilled over into a solution of iodide of potassium for titrimetric estimation. Arch. d. Pharm., Sept., 1870.

Test for Iodate in Iodide of Potassium.—Schering recommends the use of tartaric acid. On dropping a crystal of tartaric acid into a solution of the iodide of potassium in previously boiled distilled water, a visible yellow zone forms around the margin of the crystal if iodic acid is present. Arch. d. Pharm., Nov., 1870.

Mutation of Colors in some of the Double Iodides.—In the preparation of double iodides, Edward Mensel precipitated a solution of iodo-hydrargyrate of potassium with nitrate of silver, and obtained a yellow precipitate, which, when gently heated under water, assumed an intense red color, which changed back rapidly on cooling to the original color. No instance has hitherto been observed where the transformation of colors was so rapidly effected on the removal of the source of heat. Another instance of rapid and intense alteration of colors was exhibited by the double iodide of mercury and copper. It is attained by the addition of sulphate of copper and sulphurous acid to a warm solution of iodo-hydrargyrate of potassium. The precipitate appears red at 40° C., but black at 70° C. Pharm. Centralhalle, Jan. 26, 1871.

SULPHUR.

A new source of sulphur has been discovered in the Island of Saba, one of the Dutch West Indies. The island is of volcanic origin, about eleven miles in circumference, and at its highest point about 2800 feet above the sea. The ore is said to average over 60 per cent. of sulphur. Am. Journ. Pharm., Sept., 1870.

Detection of Sulphur.—Schönn discovers sulphur compounds whether organic or inorganic, sulphates as well as sulphides, by heating the dry compounds with sodium. Sulphide of sodium is formed, which, when treated with hydrochloric acid, eliminates sulphide of hydrogen, or will yield when dissolved in water with nitro-prusside of sodium, a beautiful violet color. Zeitschr. f. Analyt. Chemie, viii, 51 u. 52.

Solubility of Sulphur in Bisulphide of Carbon, &c.—Cassa has determined the solubility of sulphur in bisulphide of carbon, as follows:

100 parts of bisulphide of carbon dissolve at	—11°	6°	0°	+15°	18.5°	22°	38°	48.5°	55° C.
Sulphur pts.,	16.54	18.75	23.99	37.15	41.65	46.05	94.57	146.21	181.34

The following solutions are effected with absorption of heat:

	100 pts. of benzole		100 pts. of toluol.	100 pts. of ether.
	at 26°	71°	23°	23.5° C.
Sulphur pts.,	0.965	43.77	1.479	0.972

	100 pts. of chloroform.	100 pts. of phenol.	100 pts. of aniline.
	at 22°	174°	130°
Sulphur pts.,	1.205	16.35	85.27

From Ber. d. Deutsch. Chem. Ges.; Wittstein's Viertelj., Dec., 1870.

Solubility of Sulphur in Coal Tar Oils.—The oils obtained in the distillation of tar produced by gas works, dissolve a large amount of sulphur at a temperature approaching their boiling-point, and as soon as the temperature is lowered the sulphur is precipitated in the crystalline form. This property of the oils is proposed by C. Widemann for the extraction of sulphur from volcanic sulphur ores, and especially in treating the matter used for the purification of common street gas, where a large quantity of sulphur is lost. Journ. of Appl. Chem., April, 1871.

Lefort (Journ. de Pharm. et de Chim., 1869, ix, 99) having studied the reactions resulting from the action of nitro-muriatic acid upon sulphur, concludes that the formation of sulphuric acid is preceded by the incidental generation of chloride of sulphur; this compound being eventually decomposed into sulphuric acid and chlorine, the latter to combine anew with a quantity of sulphur to form chloride of sulphur, and so on. It does not seem to require as much muriatic as is usually contained in aqua regia, 1—3. If the proportions are reversed to 1 part of muriatic acid, and 3 parts of nitric acid, 30 parts only of the mixed acids are required for 1 of sulphur, while on the other hand the former proportions will require from two to three times the quantity. Wittstein's Vierteljahresschr., July, 1870.

Sulphurous Acid as a Disinfectant.—Mr. John Gamgee calls attention to the convenience of employing this agent for disinfecting purposes as disengaged from alcoholic solution. Cold alcohol will, he states, take up three hundred times its bulk of sulphurous acid gas. Where, for example, it is desired to saturate a box of clothing with this gas, it is sufficient to drop a quantity of the saturated solution of the gas in alcohol into the floor of the box, and a large definite quantity is set free by evaporation. Pharm. Journ., London, Dec., 1870.

Alcoholic Solution of Sulphurous Acid.—Mr. John Gamgee calls attention to the convenience attending the use of a saturated alcoholic solution of this acid. Cold alcohol will take up, he states, three hundred times its bulk of sulphurous acid. As there is a want for a convenient method of applying it for disinfecting purposes, this solution will form a convenient way of disengaging the gas in any limited space, and in any desired quantity. From Brit. Med. Journ.; Chicago Pharmacist, Feb., 1871.

Bisulphite of Calcium.—W. A. Weatherbee publishes an account of the manufacture and uses of bisulphite of calcium in Journ. of Applied Chem. and Drug. Circ., Nov., 1870.

Sulphurous Acid and Carbonic Oxide.—The application of these compounds in Gamgee's method for preserving meat is described in Drug. Circ., Aug., 1870.

Sulphurous Acids and the various Sulphites are mixed with the raw material in the fermenting tubs in breweries and distilleries, to produce a higher percentage of alcohol and to prevent acetous fermentation in the malt liquors. The process has been patented by E. Beanes. Drug. Circ., Sept., 1870.

A most sensitive Reagent for the detection of Hyposulphites is a solution of 1 decigram of permanganate of potassium in $\frac{1}{2}$ litre of water, holding 1 grm. of chemically pure caustic soda (prepared from sodium) in solution. This red solution is deprived of its color, when traces of salts of hyposulphurous acid are added, which is owing to a reduction of permanganic acid to the green manganic acid, a result obtained by a great num-

ber of substances, capable of oxidation under the same circumstance. In suitable cases, however, traces of hyposulphites can be discovered by this test in solutions of sulphates, as well as in hyposulphates and neutral sulphites. Pharm. Zeitschr. f. Russland, Jan. 15, 1871.

Concentrated Sulphuric Acid may be preserved and transported, according to Balmain and Menzier, with security in iron vessels. The acid should possess a specific gravity of not less than 1.65, and should be kept from contact with the external air, and contain no impurity which may act on the iron. Pharm. Zeitung, March 4, 1871.

Production of Sulphuric Acid from Gypsum.—H. Reinsch, after referring to the many hitherto unsuccessful attempts made to obtain sulphuric acid from gypsum, states that when he mixed 2 parts of pulverized gypsum with 1 part of carbonate of ammonium and poured water over this mixture, complete decomposition of the gypsum ensued, sulphate of ammonium and carbonate of calcium being formed. The sulphate of ammonium is, in its turn, decomposed by means of common salt, the result being the formation of sulphate of sodium and chloride of ammonium, which can again be converted into carbonate of ammonium by means of chalk. Chem. News, July 8, 1870.

Sulphuric Acid.—P. A. Langlois and L. S. Thomassin have patented a process for the manufacture of sulphuric acid, by which the oxidation of the sulphurous acid is effected by means of ozone. Apoth. Zeitung, Feb., 1871.

PHOSPHORUS.

Detection of Phosphorus by means of Magnesium.—The presence of phosphorus may be ascertained in any dry substance by heating with magnesium. After cooling, water is added, when a compound of phosphorus is indicated, if inflammable phosphide of hydrogen is given off, which is easily recognized by its peculiar smell and by the vapor arising from its combustion. Zeitschr. f. Analyt. Chemie, viii, 53, 56.

Phosphorous Acid, its detection in officinal Phosphoric Acid.—Dr. Rieckher recommends, in the application of Pagel's test of bichloride of mercury, equal volumes of the acid, and a solution containing 2 grains of corrosive sublimate in 2 drachms of water should be mixed and heated to a temperature not to exceed 176° F. Traces of the acid produce a weak opalescence. Arch. d. Pharm., Oct., 1870.

Phosphoric Acid.—Dr. Rieckher, having experimented on the preparation of officinal diluted phosphoric acid, finds that the best relative proportions of phosphorus and nitric acid, specific gravity 1.2, are 1 to 14. He prefers to oxidize the phosphorus in a tubulated retort, the lower part of which is protected externally by a double iron-wire gauze envelope. Heat is applied by a spirit-lamp, taking care to remove it when the reaction should become violent. After the solution of phosphorus is effected, the acid liquid should be heated to 350° to 370° F., at which temperature the phosphorous acid is oxidized, and any excess of nitric acid decomposed or volatilized. The acid solution should then be diluted, treated with sulphide of hydrogen, filtered, and brought by evaporation to the required density. The evaporation may be conducted in a porcelain dish, at a temperature not exceeding 388° F., at this heat the acid having no action on genuine porcelain. Arch. d. Pharm., Oct., 1870.

Amount of Arsenic in Phosphorus of Commerce.—In preparing phosphoric acid by the officinal process and passing sulphydric acid through the solution to free it from all substances precipitable by that agent in acid solutions, C. J. Rademaker invariably obtained a yellowish precipitate, which, upon examination, proved to be sulphide of arsenic. 100 grammes of phosphorus were subsequently analyzed, and yielded 15 grains of As_2S_3. Amer. Journ. Pharm., Nov., 1870.

BORON.

Borate of Calcium.—Immense deposits of borate of calcium have been discovered near Wadsworth, a station on the Central Pacific Railroad, in Washoe County, State of Nevada, one of the lowest

points on the railroad for many hundred miles, the elevation being 4104 feet above the level of the sea. The market of San Francisco is now principally supplied with borax from refineries contiguous to the localities where the deposits occur, and from San Francisco refinery.

SILICON.

Solubility of Natural Silicates in Water.—A. Cossa (Ricerche di Chim. Mineral Udine, 1868), experimentally subjecting finely pulverized rocks to the action of distilled water at 17° to 18° C., found that water is capable of dissolving 0.35 per cent. feldspar, 0.326 per cent. phonolith, 0.1271 per cent. basalt, &c. Journ. f. Pract. Chem., 1869.

Silico-propionic Acid.—While organic chemistry is aptly called the chemistry of carbon, C. Friedel and A. Ladenburg are engaged in researches, which tend to place silicium parallel to the former element. What is called silico-proprionic acid, $Si_2C_4H_5O_3HO$, is a compound wherein a large percentage of the carbon of the proprionic acid, $C_6H_5O_3HO$, is replaced by silicium. Compt. Rend., June, 1870.

The action of Ammonia upon Phosphorus, at ordinary temperatures, has been studied by Blondlot (Journ. de Pharm. et de Chim., 1869, ix). The phosphorus changes color, and is gradually converted into a black, hard substance, which afterwards falls to powder. The change is effected most rapidly by direct sunlight, the least so in the dark, and the strength of the ammonia also modifies greatly the intensity of the reaction. The final product is a fine black powder, the exact chemical characteristics of which have not been determined. It is unchangeable at 100° C., and in water; after a prolonged exposure to air it gives off minute quantities of ammonia, turning yellow, and assuming some of the properties of the red or amorphous phosphorus, characterized by the absence of phosphorescence, insolubility in bisulphide of carbon, and in weak solutions of the fixed alkalies. Below a temperature of 200° C. the yellow powder is quite unchangeable, but if heated to a higher temperature, spontaneously inflammable phosphide of hydrogen is

given off, and the substance, which now assumed a red color, possesses the properties of amorphous phosphorus. Wittstein's Vierteljahresschr., July, 1870.

MONAD METALS.

POTASSIUM.

Oxalate of Potassium.—Nichols has reinvestigated the solubilities of the several potassic oxalates, and finds that the neutral oxalate is soluble in 3.03 parts of water at 16° C., the binoxalate requires 26.21 parts of water of 8° C. for solution, and the quadroxalate is soluble in 55.25 parts of water at a temperature of 13° C. Wittstein's Vierteljahresschr., xix, 560.

Permanganate of Potassium.—Prof. B. Howard Rand publishes an interesting article on the medicinal uses of this salt, and whilst speaking in the highest terms of its use externally as a detergent and deodorizing application, and as a deodorizer generally, doubts its efficacy when internally administered, as it would necessarily be decomposed before it could reach the circulation, or probably the stomach even. Med. Times; Amer. Journ. Pharm., Nov., 1870.

Ferrid-Cyanide of Potassium.—Prof. Reichardt recommends bromine in the place of chlorine for the preparation of red prussiate of potassium, on the ground of greater facility with which the salt is prepared, and the prevention of loss of the product by the formation of secondary compounds. From Dingler's Polytechnisches Journ., Dec., 1869; Arch. d. Pharm., March, 1870.

William T. Wenzell obtains the same salt by a method based upon the action of nascent chlorine, obtained by the reaction of bichromate of potassium and hydrochloric acid upon ferrocyanide of potassium in the state of solution. Chicago Pharmacist, March, 1871.

Bitartrate of Potassium.—The solubility of cream of tartar in water and dilute alcohol has been investigated by E. Kissel.

One part of cream of tartar is soluble in:

230.1	parts	of	water,	at a	temperature	of +10° C.
203.1	"	"	"	"	"	15° C.
162.1	"	"	"	"	"	22° C.

The following are the solubilities at 12° C.:

3.139	grm.	of	cream	of tartar	in 1000	c.c.	of water, cont.	6 per cent. alcohol.
2.779	"	"	"	"	"	8	"	"
2.652	"	"	"	"	"	9	"	"
2.490	"	"	"	"	"	10	"	"
2.250	"	"	"	"	"	12	"	"

Zeitschr. f. Analyt. Chemie, viii, 400.

The presence of lead having been observed in cream of tartar, Steudeman, under the direction of Ludwig, has estimated it quantitatively as follows:

The cream of tartar was dissolved in water of ammonia, the insoluble residue dissolved in muriatic acid, and through the two diluted solutions was passed sulphide of hydrogen. The precipitates were collected on a tared filter; first, that obtained from the ammoniacal liquid, followed by that obtained in the acidulated solution, the free acid of the latter taking away the sulphuret of iron, which is usually precipitated from the ammoniacal solution by sulphide of hydrogen. The precipitated sulphide of lead was, after drying, weighed, and further oxidized, and the metallic lead estimated as a sulphate. Arch. d. Pharm. cxciii, iii.

SODIUM.

Preparation of Caustic Soda from Sodium.—The great reduction in price of sodium which has made it a commercial article, enables it to be used for obtaining pure caustic soda. It is prepared by bringing in contact, in a silver vessel properly cooled to prevent explosions, small quantities of distilled water and sodium. From Journ. de Pharm.; American Journ. Pharm., Nov., 1870.

Crystallized Hydrate of Sodium.—O. Hermes (Zeitschr. für Chemie) prepared the crystallized salt by exposing a concentrated solution of caustic soda, spec. grav. 1.365, to an intense cold during winter. It crystallized in rhombic prisms, whose anterior

planes form angles of 98°. The crystals present a glassy appearance, are colorless, perfectly transparent, melt at a temperature of 6° C. and have the composition NaO,HO+7HO. Pharm. Zeitschr. für Russl., Jan. 15, 1871.

Preparation of Sulphovinate of Sodium.—Dietz (Jahrb. für Pharm. Bd. xxxiv), in view of the constitution of this salt ($NaO, C_4H_5O,2SO_3+HO$), mixes 12 ounces of fuming sulphuric acid, free from arsenic, with 8 ounces of 95 per cent. alcohol, adding the acid rapidly to cause a rise of temperature (167° Fahr.), in order to assist the formation of sulphovinic acid. The mixture is then diluted with water, treated with carbonate of barium, filtered, and the solution of sulphovinate of barium precipitated with a sufficiency of carbonate of sodium to cause a weak alkaline reaction. The filtered liquid is then evaporated with constant stirring (avoiding boiling) to a pasty mass, which on cooling and continued stirring changes into a white voluminous powder. On mixing sulphovinate of sodium with dry acetate of potassium, and heating the mixture in a test-tube, acetic ether is evolved, characteristic of the sulphovinates. In the organism, this salt is decomposed by action of the gastric juice into sulphate of sodium and alcohol, which in its nascent state seems to counteract the relaxing influence of the purgative. Journ. de Pharm., Feb., 1871.

Adulteration of Carbonate of Sodium.—The Antwerp Journal of Pharmacy calls attention to the practice of adulterating carbonate of sodium by mixing it with a proportion of sulphate of sodium. At first sight the admixture is not apparent, though the two salts differ chemically from each other, both in their crystallization and their chemical properties. Pharm. Journ. and Transact., Aug., 1870.

Silicate of Sodium.—Dr. F. A. Flückiger has instituted a series of experiments on the action of various salts soluble in water, upon a solution of silicate of sodium (soluble glass). The author has found that the more soluble salts of potassium, sodium, lithium, and ammonium, possess the property of precipitating the silica from a concentrated solution of silicate of sodium. Caustic ammonia (sp. gr. 0.921) separates from the silicate solution, silica,

but the precipitate is redissolved on heating. A drop of bromine, a bubble of chlorine, a drop of creasote or carbolic acid dissolved in glycerin, also dilute solutions of albumen and gelatine, or glue, will decompose the silicate; while, on the other hand, other kinds of gum and mucilage, sugar, dextrine, glycerin, and urea, do not decompose the solution. Buchn. N. Repert., Bd. xix, § 257.

AMMONIUM.

Purification of Ammonium Salts from Gas Liquor.—The most volatile hydrocarbons are volatilized by boiling the liquor previously supersaturated with hydrochloric acid, with some protosulphate of iron. It is finally treated with a dilute solution of permanganate of potassium, until a portion filtered and neutralized by an alkali will not decolorize a drop of the chameleon solution. The further addition of a slight excess of an alkali will precipitate the metallic oxides, and carry down with it other impurities. From Pharm. Journ. and Transact., 2d Ser., vol. xi; Arch. d. Pharm., Juli, 1870.

Influence of Ammonia on Guaiacum Paper.—A. Greiner found that guaiac paper, moistened with a very dilute solution of sulphate of copper, and exposed to the vapors of ammonia and carbonate of ammonium, assumes a blue or green color, and regards it as hazardous to attempt to distinguish these gases from hydrocyanic acid, merely from the different tints produced with this test-paper (HCy colors it indigo blue). Zeitschr. f. Anal. Chem., 1870; Amer. Journ. Pharm., July, 1870.

Solvent Properties of Anhydrous Liquid Ammonia.—Professor Seely has made the discovery, that anhydrous liquid ammonia has a solvent power upon certain metals, and he has actually succeeded in obtaining a solution of sodium in this liquid. The solution presents all the physical characters of a true solution. On evaporation the sodium is gradually restored to the metallic state in the same continuous manner in which the solution has been effected. The color of the solution is a very intense blue. From Journ. of Applied Chem.; Dental Cosmos, May, 1871.

Neutral Carbonate of Ammonium.—This hitherto not obtained

salt, NH_4O+CO_2, has been prepared by E. Divers. It remains as a pulverulent semi-crystalline mass when commercial sesquicarbonate of ammonium is treated with liquor ammonia. When quickly collected and pressed, white silky crystals are obtained, which are very soluble in water and 70 per cent. of alcohol. They are rapidly decomposed by exposure to air into the bicarbonate, with the disengagement of ammonia. The crystals contain one equivalent of water. From Phil. Magaz.; Journ. f. Pract. Chem., cv, 478.

Action of Carbonate of Ammonium upon the Sulphates of the Alkaline Earths.—When digesting solutions of sulphate of strontium, and sulphate of barium with equivalent quantities of carbonate of ammonium, according to J. Reinsch (N. Jahrb. f. Pharm., July, 1870), carbonic acid is copiously evolved, the sulphate of strontium is converted into a carbonate, and the filtrate proved to be a solution of sulphate of ammonium. The sulphate of barium is at first converted into a carbonate, and instantly reconverted into sulphate of a softer, snow-white color, the liquid being free from sulphuric acid. The author recommends this mode of separating, for analytical purposes, the alkaline earths, by converting them into sulphates, and digesting these compounds with carbonate of ammonium, when lime and strontia, having been converted into carbonates, may be obtained in solution by dilute acids, while sulphate of barium is left behind. Am. Journ. Pharm., Feb., 1871.

SILVER.

Preparation of Pure Silver.—To obtain pure silver by a simple and practical process, Dachauer dissolves impure silver in a mixture of three parts of nitric acid, spec. grav. 1.30, and one part of water, removing by evaporation the excess of acid, and afterwards diluting with water. On inserting a sufficient number of bright and clear strips of copper, a rapid reduction takes place, which is complete, if the addition of muriatic acid to a portion of the liquid does not cause a precipitate. As lead and bismuth are not precipitated from their solutions by metallic copper, the silver alone is thrown down, entirely pure, and in

the form of a grayish loose mass. Pharm. Zeitschr. f. Russl. ix, 179.

Reduction of Chloride of Silver. — In connection with the process for refining gold, an excellent method for reducing the silver chloride has been effected by its inventor, Prof. Leibius, assayer of the mint at Sidney. The silver-chloride is cast in flat plates, and then arranged in a box or frame, with alternate plates of zinc, coupled as for a galvanic battery. The whole being immersed in water, a galvanic action is set up, the reduction is soon finished, and the silver is so compact and free from zinc, that, without acid treatment, it may be carried to the melting-pots. From Journ. Frank. Inst.; Dental Cosmos, May, 1871.

Nitrate of Silver.—Mierzinsky uses for the preparation of this salt refined silver only, in preference to coin or silver containing foreign metals, using for the solvent nitric acid, of spec. grav. 1.18–1.20. He evaporates the solution to dryness, and carefully fuses the residue to a point, short of the reduction of nitrate of copper, and dissolves the cooled mass in water. The solution is next filtered through asbestos, and evaporated to the point of crystallization. The remaining mother liquid may be evaporated for the crystallization of more of the salt, as long as the crystals have a colorless appearance. Arch. d. Pharm., cxci, 193.

Improvement on the Volumetric Estimation of Silver.—The method of Gay Lussac being defective, inasmuch as a quantity of chloride of silver is generally held in solution in the liquid in which it is formed, the quantity of which fluctuating usually between one to six thousand in a liquid of 100 c.c. According to Stas, this error is avoided by the use of bromine instead of chlorine as the precipitant, the original simple method of operation being retained. Comp. Rend., t. 67, p. 1107; Arch. d. Pharm., July, 1870.

DYAD METALS.

BARIUM.

Manufacture of Caustic Baryta.—Rosenstiel offers a method for the preparation of baryta, based upon the decomposition of sulphide of barium, by means of hydrated oxide of zinc. A solution of sulphide of barium is boiled with the oxide of zinc, and the mixture extracted with boiling water, to dissolve the baryta. Sulphide of barium is obtained by heating to redness in a vertical tube, a mixture of heavy spar and charcoal. Chem. Centralblatt, 1870, p. 653.

Preparation of Carbonate of Barium from Witherite.—J. Creuse recommends a cheap process for the preparation of carbonate of barium, at about one-eighth of its usual cost. Witherite (native carbonate of baryta), is dissolved in dilute muriatic acid, stopping the addition of acid before the mineral is entirely dissolved. Oxalic acid is added in sufficient quantity to precipitate lime, then caustic soda sufficient to give it a distinct alkaline reaction. It is then again filtered and the carbonate of barium precipitated by a solution of carbonate of sodium. This process is founded on the fact that the oxalic acid will first precipitate the lime, while baryta is affected only after a time, and the caustic soda precipitates all the other foreign metal oxides, and alkaline earths likely to be present. Am. Journ. Pharm., Jan., 1871.

Chloride of Barium contaminated with the Hyposulphite of Barium.—This impurity has been observed by Prof. Wittstein, and may be easily detected by adding to a solution of the chloride a solution of corrosive sublimate. A turbidity or precipitate will indicate the impurity. Wittstein's Vierteljahresschr., xix, 4, 589.

CALCIUM.

Preparation of Caustic Lime free from Carbonate of Calcium.—Lime, as usually obtained, is seldom burnt completely caustic, and generally effervesces with acids. The lime may be made

completely caustic by dipping in oil and recalcination. It is distinguished from ordinary lime by the facility with which it is slaked. Arch. d. Pharm.

Solubility of Natural Carbonates of Calcium in Carbonated Water.—To obtain the coefficient of the solubility of carbonate of calcium in water saturated with carbonic acid, A. Cossa (Ric. di. Chim. Min.) found that 1000 parts of carbonated water will dissolve of artificially precipitated carbonate of calcium 0.950 parts, Cararra marble 0.855 to 1.185 parts, chalk, Iceland spar, calc. spar, dolomite, oolithic calc., 0.573 to 1.252 parts. Journ. f. Pract. Chem., 1869.

Gypsum and Sulphate of Potassium.—Schott has investigated the well-known phenomenon that aqueous solutions of salts, particularly those of the alkalies, possess the property of causing uncalcined sulphate of calcium (gypsum) to solidify. He found that on triturating crystallized sulphate of calcium and an equal quantity of neutral sulphate of potassium, with water in sufficient quantity to form a thin magma, the mixture will set much sooner than ordinary plaster of Paris. One-tenth of an equivalent of sulphate of potassium will also solidify as well, only slower. Sulphate of potassium will accelerate considerably the setting of calcined plaster, and equal quantities will solidify instantly, so that it cannot be poured. One part of each salt with two parts of water will make a mixture which can be poured. The casts obtained with sulphate of potassium and sulphate of calcium, whether made from the crystallized or calcined gypsum, do not possess the dead, chalky surface of the plaster casts, but exhibit a satiny polish. Schott has also confirmed the views of Gmelin, that the two salts form a combination, and found its formula, KO,SO_3+CaO,SO_3+HO. From Deutsche Indust. Zeit., No. 25, 1870; Arch. d. Pharm., Dec., 1870.

ALUMINUM.

Hydrated Alumina is recommended as a clarifying medium for solutions of sugars for polarization. It will decolorize and clarify solutions of sugar without influencing the results of polarization.

Hydrated Chloride of Aluminum.—Mr. John Gamgee has recently called attention to the decided antiseptic properties of this compound, which is quite as potent as chloride of zinc or carbolic acid, and devoid of unpleasant smell or poisonous properties. It can be prepared economically by double decomposition between sulphate of aluminum and chloride of calcium. After separation of the precipitated sulphate of calcium, the hydrated chloride of aluminum is obtained by evaporating the solution at a very gentle heat. Lancet; Am. Journ. Pharm., Nov., 1870.

MAGNESIUM.

Magnesium a reducing agent.—This metal, which is now an article of commerce, and is obtained in the powdered form, is useful as a powerful reducing agent for the various metallic salts, particularly chlorides. A solution of chloride of platinum is decomposed at common temperatures, with a violent disengagement of hydrogen, and the deposition of the finest platinum black. Chloride of gold and chloride of zinc are decomposed and precipitated in a finely divided metallic state. Journ. f. pract. Chem., No. 2, 137.

Sodium and Magnesium Citrate.—R. Rother suggests an effervescent solution of sodium and magnesium citrate in place of the officinal solution of citrate of magnesium, with which it would be therapeutically identical, and free of the tendency to precipitate, which is so objectionable in the officinal solution. The following is the formula:

℞.	Citric Acid in coarse powder,	457½ grains.
	Magnesium Carbonate,	182 "
	Monosodium "	168 "
Or	Disodium " cryst.,	286 "
	Monopotassium "	40 "
	Essence Lemon,	a few minims.
	Sugar in coarse powder,	1½ troy ounces.
	Water,	sufficient.

Dissolve the citric acid in 6 or 7 fluid ounces of water; to this add gradually the magnesium carbonate, first rubbed through a coarse sieve; when the solution is complete add very gradually

the monosodium carbonate, or if the disodium carbonate is used in tolerably large crystals, the whole of this can be added at once; then, after effervescence has ceased add the essence of lemon and the sugar; agitate until the latter is dissolved, filter, and add sufficient water to make it measure 12 fluid ounces; place this in a strong bottle, add the potassium carbonate, and cork securely. Drug. Circ., July, 1870.

Spontaneous Decomposition of Ammonio-Phosphate of Magnesium.—A saturated solution of this double salt, contained in a bottle from which a portion of the salt had separated, was found, after standing undisturbed for six months, to diffuse, on opening the bottle, a strong odor of sulphide of hydrogen. Neues Jahrb. f. Pharm., xxxii, 17.

In order to mask the disagreeable taste of Epsom salt, the addition of $\frac{1}{3}$ of an ounce of ground roasted coffee to 1 ounce of Epsom salt in 10 ounces of water is recommended, the whole brought to boiling, and finally strained. Wittstein's Vierteljahresschr., July, 1870.

ZINC.

Sulphite of Zinc is prepared, according to R. C. Tichborne, by dissolving 6 ounces of sulphate of zinc, and $5\frac{1}{4}$ ounces of sulphite of sodium respectively, in 6 and 10 ounces of distilled water, and mixing the solutions while hot. On cooling, the sulphite of zinc is deposited in needlelike prisms. To facilitate their purification, the above mixture is stirred whilst cooling so as to obtain microscopic crystals, which are then thrown on a filter and washed with distilled water as long as the washings give a decided precipitate with chloride of barium in presence of hydrochloric acid. The salt is finally dried at 100° C.

Its composition, when dried at 100° C., was found to be $ZnSO_3 2H_2O$, and when dried in the air or over sulphuric acid, $ZnSO_3 3H_2O$. Sulphite of zinc is insoluble in cold water, but readily soluble in an excess of sulphurous acid. When dry, both the di- and trihydrate are perfectly stable salts, suffering no oxidation on exposure to air; but in solution the salt is gradually converted into sulphate, although a saturated solution in sul-

phurous acid suffers very little change. The author adds several formulas for preparing a neutral and an acid lotion; also, an ointment and a compound ointment of sulphite of zinc. Pharm. Journ., London; Pharmacist, Dec., 1870.

Sulphocarbolate of Zinc.—A simple and economical process for the preparation of this salt is published by A. P. Lyons, M.D. 17 parts of sulphuric and 16 parts of carbolic acid are heated together; the resulting sulphocarbolic acid is diluted with ten times its volume of water, and saturated with carbonate of lead. Into the filtered solution of sulphocarbolate of lead is introduced a quantity of pure granulated zinc equal to the weight of carbolic acid employed, when at the end of twenty-four hours the solution will be found free of lead, giving no precipitates with iodide potass. or sulphuric acid. The solution of sulphocarbolate of zinc is then heated to boiling, evaporated, and allowed to crystallize, or the salt may be obtained in granular form by evaporating to dryness. Am. Journ. Pharm., Nov., 1870.

Phosphide of Zinc (Zn_3P).—A new remedy to replace phosphuretted oil is prepared, according to Proust (Gazette Méd. de Paris, 1869), by passing a mixture of phosphide of hydrogen and nitrogen through a porcelain tube heated to redness, containing a porcelain tray with metallic zinc. The nitrogen is obtained by heating a mixture of muriate of ammonia and nitrite of potassium, and the phosphide of hydrogen from phosphide of calcium and muriatic acid. The preparation is crystalline, spongy, and sometimes fused, but its composition is constant. Its fracture is glassy, it is easily pulverized, and readily acted upon by acids with the disengagement of phosphide of hydrogen. The nitrogen serves to counteract the inflammability of the phosphide of hydrogen, and is passed into the flask in which the latter is generated. Wittstein's Vierteljahresschr., Dec., 1870.

Zinc, its influence upon Vegetation.—A. Braun has observed, some years ago, that zinc may enter the vegetable organisms, without detriment to their development. Dr. M. Freytag having reinvestigated this subject, finds that all plants growing upon soil charged with zinc absorb the metal. The percentage of

oxide of zinc, in the ashes of those plants, varies from one-half to one per cent.; the most oxide being found in the leaves and stem, and the least in the seed. Wittstein's Vierteljahresschr., xix, 247.

COPPER.

Metallic Copper, in a finely divided state, is obtained by Kolba (Dingler's Polyt. Journ., cxc, 495) by mixing a clear solution of sulphate of copper with a solution of grape sugar and ammonia, adding a sufficient quantity of caustic soda until a precipitate is formed, which is heated to boiling for ten minutes, and then allowed to cool. The precipitated metallic powder is best washed and collected by previously faintly acidulating the liquid with sulphuric acid. The drying must be effected as rapidly as possible. Wittstein's Vierteljahresschr., July, 1870.

Sulphocarbolate of Copper is prepared by Schering in beautiful crystals, resembling in color sulphate of copper, and containing, according to the formula furnished by the maker, twenty atoms of water of crystallization. No formula for its preparation is given, but it is probably prepared like the sulphocarbolate of zinc. A solution of the strength of 12 centigr. of the salt to 30 grm. of water, is used for lotions. Arch. d. Pharm., cxciii, 27.

Dr. Roberts, of Paris, recommends the salts of copper as the best preservatives of stone in a moist climate. These act by preventing the formation of minute lichens, which he supposes to produce the disintegration of the stone. Chemist and Druggist, No. 8, 1871.

MERCURY.

Preparation of Calomel.—Prof. Oscar Oldberg furnishes a practical process suited to pharmacists for preparing calomel in the humid way, by adding an acid solution of protonitrate of mercury to hydrochloric acid diluted with water. The precipitated calomel is washed first by decantation, and afterward on a filter. The calomel, after thorough washing, is stated to be perfectly free from basic nitrate of mercury and corrosive sublimate. Amer. Journ. Pharm., April, 1871.

Dr. Unoth of Nauheim, in N. Jahrb. f. Pharm., furnishes the following simple method for the preparation of calomel: Oxalic acid is added to a solution of bichloride of mercury, and the mixed solutions exposed to the direct rays of the sun, when protochloride of mercury is formed and separated in minute crystalline plates. The reaction of the process depends simply upon the oxidation of oxalic acid into carbonic acid, and the formation of hydrochloric acid, the $HgCl_2$ being reduced to HgCl. Pharm. Zeitung, Mai, 1871.

Density of the Vapor of Calomel.—According to Debray, the density of calomel vapor, 8.21, as recently found by Sainte Claire-Deville and Troost, differs less from the theoretical numbers 8.15, if the assumption is correct that the formula HgCl corresponds to 4 volumes of the vapor. Later chemists, however, assume that the formula of calomel should be written Hg_2Cl_2, yet they do not admit that its formula agrees with a body of 8 vapor volumes. They assume that the chloride of mercury, at the temperature at which its vapor density is determined (440° C., the boiling point of sulphur), is decomposed into metallic mercury, and $HgCl_2$, the vapor of which occupies always 4 volumes. A decomposition, however, does not take place, as was proven, by the introduction of a gold plate into the balloon, and, therefore, if the advanced formula of Hg_2Cl_2 should be verified, calomel would necessarily be classed among bodies, the vapor density of which will correspond to 8 volumes. Arch. d. Pharm., Feb., 1871; from Compt. Rend. and Journ. F. Pract. Chem., 1869.

Chloride of Mercury and Sodium.—Jul. Müller communicates that this double salt, prepared by the addition of ten times the quantity of chloride of sodium to one part of corrosive sublimate, does not coagulate albumen, and is therefore the most rational method for the exhibition of corrosive sublimate as a remedial agent. From experiments instituted by Stern, results were obtained showing that syphilis yielded by its use in less time, and with only one-fourth of the corrosive sublimate usually required, inunction excepted. N. Jahrb. f. Pharm., Jan., 1871.

Natural Cinnabar is found in Borneo equal in purity to that obtained artificially. Arch. d. Pharm., July, 1870.

TRIAD METALS.

THALLIUM.

Thallium previously melted under cover of cyanide of potassium may be preserved indefinitely in distilled water carefully freed from air by boiling. Arch. d. Pharm., Feb., 1870.

GOLD.

A New Chloride of Gold.—M. Debray announces the discovery of a new chloride of gold that is not decomposed by heat, but is volatile at 572°, about the boiling-point of mercury. Its other properties are not defined. Druggists' Circular, Jan., 1871.

Experimental Researches on Gold and its Compounds.—According to J. P. Pratt (Comp. Rend.), in order to obtain a solution of gold, the two constituents of the aqua regia should each be diluted with their own bulk of water previously to being mixed together; the metal having been dissolved, of course heat is to be applied. The previously quite cooled liquid is neutralized with bicarbonate of potassium; and next oxalic acid is added, which causes the reduction of the gold to the metallic state, which agglutinates by applying heat, so as to become a spongy mass, which may readily be kneaded to any shape by the fingers. The writer describes the combinations of gold with oxygen and with chlorine: an intermediate or olive-colored oxide, Au_2O_2; a binoxide, AuO_2; a protochloride, sesquichloride, and perchloride, the latter a volatile substance. Among the salient points resulting from the writer's researches, the most remarkable is that gold may be readily oxidized and salified by some of the oxacids. From Chemical News; Druggists' Circular, Feb., 1871.

TETRAD METALS.

PLATINUM.

Platinum in Lapland.—Professor Nordenskjöld, of Stockholm, announces that among the gold found recently in considerable quantities near the Joaso River, of Northern Lapland, was found also platinum, a metal not hitherto discovered in the Scandinavian granite regions, usually so rich in rare metals. Arch. d. Pharm., Nov., 1870.

OSMIUM.

Osmium Amide (OsO_2NH_2).—This compound, an orange-yellow, crystalline, odorless powder, soluble in water, and discovered by Fremy, is recommended by Owsjannikow in place of perosmic acid for histological research (Journ. für Pract. Chemie, Bd. 108, s. 186). The osmic amide gives off no offensive and irritating vapors; it colors all animal tissues at first brown and finally black. Tissues preserved in chromic acid, alcohol, and other antiseptic agents, are similarly colored. Pharm. Zeitsch. für Russl., Nov., 1870.

TIN.

Tin Foil containing lead to the amount of 1 to 19 per cent. is often met with. Aug. Vogel found that soap, chocolate, and dry candies wrapped in such foil are not contaminated with lead, but cheese, under similar circumstances, always contained lead in and near the rind. From Buch. N. Repert., 1870, 341–345; Am. Journ. Pharm., Sept., 1870.

The impenetrability of tin foil to moisture, air, &c., being well known, E. Boudinot made a number of experiments to test the extent of its preserving power on substances enveloped in it, published in Amer. Journ. Pharm., Sept., 1870.

LEAD.

The Action of Water on Lead.—F. Casamajor, in the American Chemist, gives the results of his experiments with the

Croton water in contact with lead, and lead and copper. While the lead alone was unacted upon by the water, when in contact with copper, it became coated with oxycarbonate, and this film was easily detached by agitation, rendering the water turbid. This liquid when tested for copper gave negative results, but responded affirmatively to tests for lead. This circumstance is referred to a voltaic action resulting from the contact of the two metals. The practical inference is that the presence of lead, which has been occasionally detected in hydrant-water, arises from the use of copper boilers improperly tinned with an alloy of lead and tin, instead of block tin. The Pharmacist, August, 1870.

Lead Poisoning.—S. Dana Hayes, whilst examining into the cause of the rapid corrosion of ice pitchers, found the walls of the inner chamber made of Britannia metal, and the bottom of German silver, soldered in; the whole being then electroplated with silver. It is apparent that the inner chamber, made of this compound of metals, when filled with aerated or other corrosive water, becomes a mild galvanic battery, increasing in power with usage, and causing a solution of the lead. Pond-water, which was allowed to stand in one of the corroded pitchers for twenty-four hours, was found to contain lead in the proportion of 11.80 grains to the gallon. Pharmacist, December, 1870.

Milk as a Preservative against Lead Poisoning.—M. Didierjean, a red lead manufacturer, found milk to be a preventive of lead colic when taken regularly (one litre for each man) by the workmen in his factory. Chem. News; Pharmacist, Aug., 1870.

Crystallized Basic Acetate of Lead.—The following process was found to yield basic acetate of lead in crystals. One part of acetate of lead and two parts of litharge were triturated well together, and with one part of distilled water heated to boiling for two or three minutes in a porcelain dish. When filtered while hot through a warm funnel, the filtrate on cooling crystallized, forming a mass of shining silky crystals. Pharm. Zeitschr. f. Russ, October, 1870.

Subacetate of Lead.—M. Nerwing attributes the flocculent

precipitate occurring in the solution of subacetate of lead to the fact that an excess of oxide is taken up, and a basic acetate of lead formed, when the solution is made with heat. To obviate this he recommends to make it without heat by simply mixing the water, litharge and acetate of lead in a bottle, letting it stand with frequent agitation for twenty-four hours and filtering. Journ. de Pharm. et Chimie; Amer. Journ. Pharm., September, 1870.

IRON.

Iron obtained by Electrolysis. — Dr. Klein, of St. Petersburg, states that the iron obtained by electrolysis is not, as has often been thought, the pure metal; but, on the contrary, a compound of hydrogen and iron, which, when heated to redness, gives off an enormous amount of that gas, and becomes, while greatly reduced in bulk, a silver white, very soft, ductile, and malleable metal, which decomposed water readily below its boiling-point, and oxidizes most rapidly. Druggists' Circular, January, 1871; Amer. Journ. Pharm., November, 1870.

Lead in Ferri Pulvis.—Lead is an impurity frequently found in this preparation. Hager adds to 0.5 grams of the iron a few c.c. of water, then gradually 4 c.c. of hydrochloric acid, and 3 c.c. of nitric acid. After solution is effected it is evaporated to one-fourth of its volume, a few drops of ammonia added to remove excess of acid, and a solution of 5.6 grams of acetate of soda, dissolved in 35–40 c.c. of water. If boiled for a few minutes, and tested with the yellow chromate of potassium, a yellow precipitate or turpidity will indicate the presence of lead. Pharm. Centralhalle, März, 1870.

Dialyzed Sesquioxide of Iron. ($Fe_2Cl_3+12Fe_2O_3+Aq.$) Berlandt uses for a dialyzer a hog's bladder, well washed, to which is tied a glass tube of 10 m.m. diameter, taking due care not to close the opening of the tube. On filling the bladder half full of a solution of sesquichloride of iron and hydrated sesquioxide of iron, and suspending it into a beaker glass filled with distilled water, in eight days the liquid was completely dialyzed; while, on the other hand, a like quantity operated upon with

ordinary dialyzers, required a period of fourteen to eighteen days. Arch. de Pharm., August, 1870.

Iodate of Sesquioxide of Iron.—This last salt, having the formula of $Fe_2O_3,2IO_5,8HO$, is obtained by mixing a solution of iodate of sodium with an ammoniacal solution of sesquisulphate of iron. If properly prepared it appears as a yellowish red precipitate, which is nearly odorless and tasteless, unchangeable in air, sparingly soluble in water, but soluble in nitric and sulphuric acid, forming a colorless solution. Hydrochloric acid decomposes it with the evolution of chlorine. Iodate of iron is recommended as a remedy on account of its stability and want of taste. According to the investigation of Rabuteau the iodates are changed into iodides during passage through the organism. From Pharm. Centralhalle; Pharm. Zeitschr. f. Russland, November, 1870.

Pyrophosphate of Iron and Sodium.—The Journal d'Anvers gives the following method of preparing this double salt. A solution of 6 parts of pyrophosphate of sodium in 120 parts of water is mixed with another solution containing 13 parts of liquid perchloride of iron of 1.44 spec. gr. and 78 parts of water. The precipitate is washed and then dissolved in a warm solution of 4 parts of anhydrous pyrophosphate of sodium in 36 parts of water. The liquid is evaporated till a pellicle forms and allowed to crystallize. The crystals are dried at the ordinary temperature, or the concentrated solution may be precipitated by the addition of four times its volume of strong alcohol. A translucid white precipitate is obtained. Drug. Circ., July, 1870.

Benzoate of Iron.—F. Sestini, after describing at length the various metallic benzoates, observes in regard to the benzoate of protoxide of iron, that it is erroneously stated in works on chemistry, that this salt is crystallizable and very soluble. The author states, that it is a salt which so rapidly oxidizes, that he could not even determine its composition; and as regarding the existence of a crystalline peroxide salt, no such compound exists. Bul. Mens. Soc. Chem., June, 1870.

Ammonio-citrate of Iron.—In the preparation of this salt, C. Lewis Diehl objects to the use of an excess of ammonia. By

reserving one sixteenth of the solution of citrate of iron, adding to the main bulk of the solution aqua ammonia until in slight excess, and then the reserved portion, the salt obtained was invariably found to be rapidly soluble in water, and while it was readily removed from the glass plates, to be less prone to deliquescence.

Citrate of Iron.—C. Lewis Diehl observed during the evaporation of a solution of citrate of iron, that the solution became uncommonly dense before it had been reduced to the required measure, and that on diluting a portion with water a turbid mixture was produced, owing to the solvent action of the solution upon prolonged contact with the hydrated sesquioxide of iron. The subsequent addition of a relatively small quantity of citric acid readily dissolved the precipitated sesquioxide, rendering the solution limpid and miscible with water without the production of a turbidity. The Pharmacist, Sept., 1870.

Iron, Nitrate of.—Leussen has analyzed different commercial articles of the so-called nitrate of iron, a dark brown liquid used for dyeing purposes, and found it to be a solution of ferric and ferrous sulphates with a small quantity of nitric acid. He gives the following proportions for making it: 18 parts of water to 6 parts sulphuric acid of 66° Baumé, 7 to 8 parts of nitric acid of 35° B. To this mixture is gradually added 38 parts of copperas. Drug. Circ., Dec., 1870.

To prepare liq. ferri persulphatis and liq. ferri subsulphatis without the formation of noxious gases, J. Creuse recommends the sesquioxidation of the sulphate of iron by means of chlorate of potassium, instead of nitric acid. The product contains a small quantity of chloride of potassium. From the Physician and Pharmacist; Am. Jour. Pharm., April, 1871.

Double Sulphide of Iron and Potassium.—By heating an intimate mixture of 5 parts of sulphur, 5 parts of potassic carbonate and 1 of fine iron filings, C. Preiss produced a double sulphide of potassium and iron crystallizing in red needles, having a metallic lustre and resembling in appearance potassic manganate. Its formula is KS,Fe_2S_3.

NICKEL.

Nickel is being used quite extensively for electroplating. M. Gaiffe in a paper before the Academy of Sciences stated that the presence of the smallest quantity of potassa soda or the alkaline earths in the bath would prevent the proper adhesive coating of the metal, and that the use of perfectly pure double chloride or sulphate of ammonium and nickel, and perfectly pure nickel, as one of the electrodes, were necessary to secure regular and strong adhesion of the nickel. M. Becquerel, however, repeated some former experiments and contradicts the above, stating that the double sulphate of nickel and potassium in the bath gives as good results as the double sulphate of nickel and ammonium. Drug. Circ., July, 1870.

An account of the patent process of Dr. Isaac Adams, for nickel plating, is published in Drug. Circ., Oct., 1870.

MANGANESE.

Purification of Salts of Manganese from Cobalt.—F. Muck recommends to suspend in neutral solutions of manganese, some carbonate of manganesium, heating to boiling, and passing through them sulphide of hydrogen. The cobalt is thereby precipitated, an equivalent amount of manganese passing into solution. Zeitschr. f. Chemie, 1869, 626.

Behavior of Permanganate of Potassium with Sulphuric Acid.—Dr. Spiess states that while he was engaged preparing from a mixture of permanganate of potassium (dry) and concentrated sulphuric acid ozone, violet-colored vapors appeared, which at first he believed to be iodine; on investigation, however, no iodine was found at all. On repeating the experiment the author obtained what he thinks is a new, hitherto unknown compound. Journ. f. Pract. Chem., 1870.

Permanganate of Potassium, its behavior in Alkaline Solutions.—Dr. Mohr states that if this solution is absolutely free from organic matter, it may be heated to boiling without reduction. For making the solutions, the use of filtering-paper,

strainers, and all organic materials ought to be carefully avoided, and fused alkalies should only be employed. Zeitsch. f. Anal. Chem., 1870, 39–41.

PENTAD METALS.

ANTIMONY.

Oxychloride of Antimony.—L. Schæffer succeeded in obtaining the crystalline oxychloride, by heating one equivalent of alcohol and one of protochloride of antimony in a closed tube for several hours, at a temperature of 160° C. The crystals thus obtained contained 20.40 per cent. of chlorine, the formula SbO_2Cl requiring 20.69 per cent. Arch. d. Pharm., Feb., 1870.

Impure Black Sulphuret of Antimony.—Dr. R. Mirus calls attention to the commercial powder of black antimony, which always contains powdered quartz, sometimes 30 to 40 per cent. The latter is usually not removed by smelting the ore previous to powdering it. Arch. d. Pharm., April, 1871.

Pentasulphuret of Antimony (*Antimonium Sulphuratum Aureum*).—Dietz, and lately Wurtz (Journ. d. Pharm. et de Chimie, Juni, 1870), have shown that when golden sulphuret of antimony is obtained from Schlippe's salt ($3NaS,SbS_5+18HO$), as usually prepared in the moist way, it is never without admixture with free sulphur. The presence of sulphur is caused by the action of muriatic acid upon the hyposulphite of soda, which is invariably contained in the salt. The formation of hyposulphite of soda in the preparation of Schlippe's salt, was also observed by Prof. Ludwig (Arch. d. Pharm., Nov., 1870), who explains its production by: $2(SbS_3)+9(NaO,CO_2+10HO)+16S,=2(3NaS,SbS_5+18HO)+3NaO,S_2O_2+9CO_2+54HO$, and from these data, that by use of 24 parts of sulphuret of antimony, 18 parts of sulphur, from 18–38 parts of lime, and

92 parts of cryst. carbonate of soda, favorable results could be obtained. The salt of Schlippe crystallizes first, while the hyposulphite of soda will remain in solution.

ARSENIC.

Reagent for Arsenic.—Protochloride of tin, according to A. Bettendorf, is a sensitive test for the detection of arsenic in fuming muriatic acid. The arsenic is separated in the metallic state, containing $1\frac{1}{2}$ to 4 per cent. of tin. The test is also applicable for testing metallic antimony, sulphuret of antimony, and tartar emetic previously dissolved in fuming muriatic acid. The limit of the test is stated at $\frac{1}{470000}$. Arch. d. Pharm., Aug., 1870.

Arsenic.—A mode of restoring the bright aspect to this metal, and removing any slight coat of suboxide which may adhere to it; also a method of removing the yellowish-white crust covering phosphorus when kept under water for a long time, is published in Lond. Chem. News, Sept. 30, 1870, and Amer. Journ. Pharm., Nov., 1870.

BISMUTH.

Bismuth is found in large quantities in Australia. The South Australian Register announces, that at the Balhannah Mine this metal exists in large quantities, and that smelting works are built on the mine for extracting it from the ore. Chemist and Druggist, No. 8, 1871.

Bismuth in Texas.—This valuable and comparatively rare metal is found in Archer County, Texas. The bismuth ore is associated to some extent with copper glance, but in separate veins. Its gang is quartz, through which it is disseminated in small metallic grains, and a temperature of 500° is only required to fuse them, the melted metal being collected as it runs from the furnace. It is of a silvery whiteness, with a roseate tinge. The ores are associated with other valuable metals, cobalt and nickel. Journ. of Applied Chemistry.

Subnitrate of Bismuth.—An analysis of four samples of com-

mercial subnitrate of bismuth, by John D. Owen, is found published in the American Journal of Pharmacy, July, 1871.

Dr. Biermann has found some of the commercial articles of subnitrate of bismuth to contain notable quantities of ammonia. From Arch. d. Pharm., April, 1871; Ibid.

Reaction between Iodide of Potassium and Subnitrate of Bismuth.—W. Bathurst Woodman and C. Meymatt Tidy notice that, on the addition of iodide of potassium to the bismuth mixture of the London Pharmacopœia, a red precipitate is slowly formed, consisting of an iodide of bismuth, nitrate of potassium remaining in solution. This iodide is a dark red substance, of cubic form, insoluble both in water and solution of iodide of potassium. Saturated solutions of chloride of ammonium, chloride of sodium, ferrocyanide of potassium, and corrosive sublimate, do not dissolve it in appreciable quantity. Acetic acid dissolves it slightly without effervescence. From British Medical Journal; Amer. Journ. Pharm., Feb., 1871.

HEXAD METALS.

TUNGSTEN.

Artificial India-rubber.—An elastic mass resembling caoutchouc has been discovered by Professor Sonnenschein, and may be obtained by combining tungstate of soda with certain organic substances. If tungstic acid or tungstate of soda be added to glue, and afterwards muriatic acid, a compound of tungstic acid and glue is precipitated, which is so elastic at 85–105° F., that it can be drawn out in very thin fibres. On cooling, the mass becomes very solid and brittle. It is proposed to employ this substance in place of the costly albumen for mordanting cotton, especially for aniline colors, or to use it as a putty or cement. Druggists' Circular, Jan., 1871.

ORGANIC CHEMISTRY.

ORGANIC ACIDS.

Acetic Acid.—W. H. Bruckner found phosphate of lime an impurity, in some acetic acid sold for chemically pure acid. Amer. Journ. Pharm., Sept., 1870.

Tartaric Acid.—Prevention of mouldiness in aqueous solutions of tartaric acid. According to William H. Wood, a solution of tartaric acid in water, whether mouldy or not, if filtered, and then boiled for a short time, will not afterwards become mouldy, whether corked or stopped, or left exposed to the air. Chem. News, July 8th, 1870.

Phosphorescent Tartaric Acid.—An article of tartaric acid has appeared in commerce, which when its hard and large crystals are rubbed together becomes luminous. X. Landerer has noticed a similar phenomenon in valerianate of quinia. Zeitschr. d. allg. Oest. Apoth. Vereines, Jan., 1871.

New source of Citric Acid.—According to Professor O. Silvestri, the fruit of the cyphomandra betacea, a plant found in the gardens of Sicily, yields by analysis, from 1 to 1.5 per cent. of pure citric acid. The plant comes originally from Mexico, and has spread over Peru and other parts of South America. The Chem. and Drug., Sept., 1870.

Citric Acid, its recognition.—H. Kæmmerer notices as a characteristic reaction of citric acid, that, when a citrate is brought in contact with acetate of baryta, whether in cold or hot solutions, a white amorphous precipitate falls of $3BaO+2C_{12}H_5O+3HO+14$ Aq., and on adding after the formation of the precipitate, an excess of acetate of barium, and heating the whole on a water-bath, in the course of two or more hours, the precipitate contracts considerably, becoming heavy and granular, owing to the loss of one-half of its water. The presence of other organic acids do not influence this reaction. Zeitschr. f. analyt. Chemie., viii, 298.

Benzoic Acid.—Julius Löwe, in answer to the question whether benzoic acid exists preformed in gum benzoin, or is the product of oxidation of the resin during the melting of the gum prior to the sublimation of the acid, details in a paper his experiments at great length, and arrives at the conclusion, of the pre-existence of ready formed benzoic acid in the resin; that during the sublimation, the quantitative yield of the acid is the same, whether the process is carried on in an atmosphere of hydrogen or carbonic acid, or conducted with access of air. The last portion of his paper is devoted to a minute description of the best method for the preparation of benzoic acid. Chem. News, March, 1870.

Synthesis of Benzoic Acid.—Victor Meyer (Zeitschr. für Chemie, s. 496) obtained on mixing equal parts of dry formiate of sodium and sulphobenzolate of potassium, and fusing the mixture in a porcelain dish, dissolving the product in water and distilling after acidulating, an acid which when purified possessed all of the properties of benzoic acid. Analysis gave the formula, $C_{14}H_6O_4$.

Valerianic Acid.—Ascher transformed angelic acid into valerianic acid, by subjecting angelic acid with hydriodic acid and red phosphorus to a heat of 180°–200° C. for eight hours, the liberated iodine passing over to the phosphorus: $C_{10}H_7O_3+2HI=C_{10}H_9O_3+2I$. Pharm. Zeitschr. für Russl., Nov., 1870.

Propionic Acid.—A new source for this acid has been found by Barré (Journ. de Pharm. et de Chim., Oct., 1869) in the acid products obtained by the destructive distillation of wood. Arch. d. Pharm., March, 1870.

Preparation of Tannic Acid.—To obtain a tannin which will dissolve completely in water, Oscar Rothe extracts Chinese galls, with a mixture of twelve parts of ether, and three parts 95 per cent. alcohol, distilling off the ether and alcohol, and filtering the aqueous solution of tannin remaining in the distillatory apparatus. The solution should be evaporated with constant stirring, and finally desiccated in a drying-room. Arch. d. Pharm., Juni, 1870.

Tannic Acid.—To free commercial tannin from the greenish resin which gives the preparation a peculiar odor, Deinz adds to a solution of 6 parts of tannin in 12 parts of hot water, one-half to one part of ether, and shakes vigorously. The mixture which at first appears cloudy and very greenish, becomes clear after a few hours' standing, and the resinous coloring separates in flakes. The fluid is then filtered and the filtrate evaporated to dryness. Tannin treated in this way is odorless, and forms a perfectly clear solution in water. Drug. Circ., Oct., 1870.

Pyrogallic Acid.—M. A. Bayer, in Ber. d. Deutsch. Chem. Gesellsch., has described the production of a new color from pyrogallic acid. Crystals of galleine are first produced, and these are converted into a substance named cœruleine. This dissolved in sulphuric acid produces an olive color; with aniline it forms a rich indigo blue, and with alkalies it gives a fine green. These colors are readily imparted to cloth, and are of considerable permanence, resisting the action of soap. Chemist and Druggist, No. 8, 1871.

AMINE BASES.

Runge's Blue, which is obtained by the reaction of chloride of lime on aniline, has been critically examined by Perkins (Journ. of the Chem. Soc., 2 ser., vii, 25). This magnificent blue is only produced when aniline is used in excess, the color being, in case the proportions are reversed, a dirty red. This blue substance is a salt of a peculiar organic base; its alcoholic solution is changed to brownish-red by potassa, which is again restored to a blue, on the addition of an acid. Silk is colored a violet blue, but the color is changeable. Its alcoholic solution is prone to decomposition, passing into aniline red, slowly in the cold, but quite rapidly by heat. Wittstein's Vierteljahresschr., July, 1870.

Production of Aniline Colors from Coal Tar.—50 kilogrammes of tar will yield $1\frac{1}{2}$ kilogrammes of impure, or 750 grammes of pure benzole; from which is obtained $1\frac{1}{2}$ kilogrammes of commercial nitrobenzole, which will produce 550 grammes of

pure crystallized aniline red. It is calculated that as $1\frac{1}{2}$ kilogrammes of tar is the average yield of 50 kilogrammes of coal, and the yearly consumption of coal in Europe is about 8000 millions of kilogrammes, that the amount of pure aniline red obtainable therefrom may be placed at 2,650,000 kilogrammes. Aus der Natur, No. 6, 1870.

Aniline and Coal Tar Colors.—A lecture by W. H. Perkins on the history and manufacture of aniline and coal tar colors, and likewise an account of the production and consumption of aniline colors by Dr. J. Gessert, are republished in the Druggists' Circular, Oct., 1870.

Artificial Production of Coloring Principles.—The valuable discovery of Gräbe and Liebermann, the artificial production of alizarine, the coloring principle of madder, has already been placed in the background by Dr. Reimann, who has brought forward a new artificial coloring substance under the name of alizapurpurine; the beauty and brilliancy of its colors far exceed those obtained from madder. Arch. d. Pharm., Aug., 1870.

Naphthylamine.—To obtain this aniline base in a pure state, nitronaphthaline is reduced, according to Ballo, by means of acetic acid and iron filings, saturated to excess by solution of soda or potassa, and distilled with a strong current of steam passing through the liquid. The milky distillate deposits the suspended naphthylamine after a short time in the form of dense groups of colorless crystals, which will soon assume a violet color. Arch. d. Pharm., Oct., 1870.

ORGANIC BASES.

Electrolysis of Alkaloids.—M. Edme Burgoin has made some interesting researches on the electrolysis of atropine, brucine, strychnine, codeine, and quinine, comparing the results with the effect of the electric current on neutral sulphate of ammonium, which lead to the following conclusions:

1st. The electric current decomposes the salts of the alkaloids in the same manner that it does the neutral sulphate of ammo-

nium; that is to say, the basic element goes to reconstitute the alkali at the negative pole, whilst the remaining elements are liberated at the positive pole.

2d. In an acid solution, and in a neutral one with more difficulty, the positive liquid takes a coloration which is identical with that obtained by the direct application of nitric acid to the alkaloid, and this is independent of the formation of nitrogenous compounds.

3d. The gas disengaged at the positive pole contains not only oxygen, but also carbonic acid and carbonic oxide, sometimes in equal volumes.

4th. Besides these gases, there are formed various other products, principally ammoniacal compounds, resulting from the breaking up of the alkaloids, under the influence of the oxygen, which produces the effects of a gradual combustion, and this is more energetic in proportion to the increased acidity of the solution. The author adds that this last fact is significant of the possibility of deriving the alkaloids from other than the natural sources. Pharmacist, July and September, 1870.

New Alkaloid in Fermented Liquors.—The Cosmos communicates a statement by M. Oser, that whenever fermentation is induced by the use of yeast in saccharine liquids, a new alkaloid is formed, to which the author assigns the formula, $C_{26}H_{20}N_4$. The hydrochlorate of this base crystallizes in hygroscopic tables of bitter taste, which become brown under the influence of air. The Chem. and Drug., Aug., 1870.

OPIUM ALKALOIDS.

MORPHIA.

Decomposition of Acetate of Morphia in Solution.—Prof. Maisch found on examining a solution of acetate of morphia for hypodermic injection, which had been kept on hand for some time, and had deposited crystals, that the crystals proved to be pure morphia. The liquid had deposited a considerable quan-

tity of a pale-brown matter, neutral to test-paper, a minute quantity of acetate of morphia still remaining in solution. Am. Journ. Pharm., Feb., 1871.

Solution of Morphia for Hypodermic Injections.—According to Martindale, sulphate of morphia is not suitable for hypodermic use, as this salt requires 16 parts of water for solution, and therefore the volume of liquid is too large. He recommends the use of acetate of morphia, which is more soluble; one drachm of recently prepared acetate of morphia is to be dissolved in four fluid drachms of water, with the addition of one or two drops of diluted acetic acid to insure the complete solution of the salt. Six minims of the solution contain one grain of acetate of morphia. Pharmaceutical Journ. and Trans., Feb., 1870.

Hydrocyanate of Morphia.—Prof. J. M. Maisch observed that cyanide of potassium and a salt of morphia in neutral solutions are incompatible, hydrocyanate of morphia being separated in needle-shaped crystals, even if the solution contains only $\frac{1}{1500}$ of the morphia salt. The precipitate is prevented in acidulated solutions, and hydrocyanic acid does not precipitate a neutral solution of morphia. Neutral cyanides should therefore not be prescribed simultaneously with salts of morphia, except in acidulated solutions. Am. Journ. Pharm., June, 1871.

Apomorphia.—Mathiessen and Wright, while continuing their highly interesting researches on the action of hydrochloric acid upon some of the opium alkaloids, found that codeia, when similarly treated at a temperature of 140° C., is also converted, like morphia, into apomorphia. According to these authors, the change is effected in two successive phases, giving rise to intermediate products; a new chlorinated base being generated by the substitution of chlorine: $C_{36}H_{21}NO_6+HCl=2HO+C_{36}H_{20}ClNO_4$, which, by the further action of hydrochloric acid, is split into chloride of methyl and apomorphia: $C_{36}H_{20}ClNO_4=C_2H_3Cl+C_{34}H_{17}NO_4$. Synthetically, if the chorinated base be heated with water at the same temperature, hydrochlorate of morphia

is reproduced: $C_{36}H_{20}ClNO_4 + 2HO = HCl + C_{36}H_{21}NO_6, HCl$. From Annalen der Chem. u. Pharm.; Arch. d. Pharm., June, 1870.

Test for Narcein.—The statement of Dragendorff, in his excellent work (Die gerichtlich-chemische Ermittlung von Giften, &c., St. Petersburg, 1868), that the action of iodide of zinc and potassium caused the separation of long hair-shaped crystals, which assumed, after twenty-four hours, a fine blue color, was critically examined by W. Stein, who found that the production of the blue color was owing to the action of free iodine upon uncombined narcein. A weak solution of iodine is therefore the best reagent for solid narcein. Where narcein in solution is treated with iodide of zinc and potassium, and one drop of solution of iodine added, the blue coloration is readily obtained, and will recognize one part of the alkaloid in 2500 of water. No other alkaloids of opium (meta- and pseudo-morphia were not examined) will produce this reaction. Arch. d. Pharm., February, 1870.

Narcotina.—H. E. Armstrong has shown that, on heating narcotine with sulphuric acid, previously diluted by its volume of water over the water-bath, and afterwards adding ammonia, a body is obtained possessing the properties of dimethyl-narcotine, the base which Matthiessen and Wright had obtained from narcotine by means of hydrochloric acid. The reaction is supposed to take place according to the equation: $C_{22}H_{23}NO_7 + H_2SO_4 = C_{21}H_{21}NO_7 + CH_3HSO_4$.

Codeina.—On treating codeina in a similar manner, and dissolving the base obtained in hydrochloric acid, a crystalline hydrochlorate was obtained. On analysis the product was shown to be an isomeric hydrochlorate of codeina. By the further action of sulphuric acid one molecule of water is removed from two equivalents of codeina, then one H_2O from one of codeina, and finally apomorphia seems to be formed. The last point, however, requires confirmation. Drug. and Chem., Feb., 1871.

STRYCHNOS ALKALOIDS.

New Color Test for Strychnia.—F. L. Sonnenschein brings

forward the ceroso-ceric oxide ($3CeO,2Ce_2O_3$) as a superior color test for strychnia. Ceroso-ceric oxide is prepared by passing chlorine into a solution of potassa holding hydrated protoxide of cerium in suspension, until the white gelatinous hydrate is converted into the pulverulent, brownish-yellow ceroso-ceric oxide. This oxide, after washing and drying, forms a powder, having the appearance of lycopodium, and is soluble in concentrated sulphuric acid, forming a yellowish solution. This solution, when brought in contact with strychnia, will strike an intense blue color, which passes slowly into a violet, and finally to a cherry-red. Its sensitiveness is said to exceed that of the bichromate of potassium and sulphuric acid test. Aniline does not at first show any remarkable change of color; it is only after a time that the edges are tinged with blue. From Pharm. Centralhalle; Pharm. Zeitschr. f. Russl., Nov., 1870.

Color Tests for Strychnia.—Careful investigations, made by Mr. William T. Wenzell, on the sensibility of the various color tests for strychnia, resulted in a decided preference for the permanganate test. The author recommends a solution of 1 grain of permanganate of potassium in 2000 grains of sulphuric acid, as the most delicate test for detecting very minute quantities of the alkaloid. Parallel experiments enumerated in Amer. Journ. Pharm., Sept., 1870, proved the limit of positive recognition of strychnia by the three tests experimented with to be as follows:

By bichromate of potassium and sulphuric acid, 1–100,000.

By solution of chromic acid in sulphuric acid, 1–600,000.

By solution of permanganate of potassium in sulphuric acid, 1–900,000.

Oxidation of Brucia.—According to Schoen, the red color passing into yellow produced by a solution of brucia in concentrated sulphuric acid with nitric or nitrous acid, is not the result of the formation of a nitro compound, but of oxidation, and may likewise be obtained by chlorine water, peroxide of hydrogen, very dilute chlorate of potassium, very dilute chromic acid or chromate of potassium, dilute hypochlorite of sodium, ferricyanide potassium, bichloride of platinum, &c., &c.

ALKALOIDS OF THE UMBELLIFERÆ.

Conia.—Its artificial production, by Hugo Schiff. This alkaloid, hitherto only the product of a plant, has been generated by the author from dibutyraldin, a product obtained by the reaction of an alcoholic solution of ammonia upon butyric aldehyde, at a temperature of 212° Fahr. By heating this dibutyraldin until it distils, the first product is a neutral, oily substance; and the product which comes over last is a strong alkaline base, possessing the chemical and physiological properties of the natural conia. From Bericht. d. Deutsch. Chem. Gesell., Dec., 1870; Am. Journ. Pharm., April, 1871.

ACONITE ALKALOIDS.

Alkaloids of the Genus Aconitum.—Professor Flückiger, in a paper on the alkaloids, contained in the tubers of the different species, has arrived at the following results:

1. Aconitine is contained in the blue-flowered European and Himalayan species of aconitum, especially in A. napellus.

2. Aconitine is particularly characterized by the following properties: It is anhydrous, becomes soft in boiling water, although it only melts at or near 120° C. The aqueous solution has a bitter taste, free from acridity; it is not precipitated by bichloride of platinum, but produces an uncrystallizable precipitate, with iodohydrargyrate of potassium. It dissolves very readily in ether, chloroform, and alcohol, and forms a monochlorohydrate, $C_{30}H_{47}NO_7+HCl$. The nitrate can be obtained in well-developed microscopic crystals. Aconitine imparts a violet color to hot phosphoric acid, which has been concentrated as much as possible in a water-bath.

3. All aconitine from England which he examined agrees essentially with the German aconitine.

4. There exists, however, a base entirely distinct from aconitine, of uncertain origin, but perhaps derived from the aconite tubers (bikh) of Nepal and other Alpine regions of India. It may be distinguished as pseudo-aconitine.

5. Pseudo-aconitine has a burning, not a bitter taste. It is

insoluble in water, less soluble in ether, chloroform, and alcohol, but freely crystallizable from these solutions. It is not colored by hot phosphoric acid.

6. Napelline differs both from aconitine and pseudo-aconitine.

7. So also does lycoctonine, an alkaloid peculiar (as far as we know) to the yellow-flowered aconite (Aconitum lycoctonum, L.). Its bromine compound crystallizes from a dilute aqueous solution, but upon drying is decomposed. Pharm. Journ. and Transact., Aug., 1870; from Arch. d. Pharm., März, 1870.

ALKALOIDS OF THE SOLANACEÆ.

Atropia in Apparent Death.—The mydriatic effect of atropia upon the eye being exceedingly constant in the living organism, Doboux praises its use and effects in cases of apparent death where the contractility of the iris is not entirely obliterated. In the instant, however, when the pupil is found in the opposite or dilated condition, either from disease or narcotic poisoning, and the opposite effect is desired, the application of a preparation of calabar bean to the eye will prove quite as effectual. Zeitschr. d. allg. oest. Apoth. Vereines, März, 1871.

CINCHONA ALKALOIDS.

Concentrated Ethereal Solution of Quinia.—This solution has of late been used by physicians for hypodermic injection, for which the neutral solution of sulphate of quinia and the acid sulphate seem inadmissible, the former on account of its insufficient solubility, and the latter from its irritant quality. The ethereal solution is obtained by dissolving recently precipitated hydrated quinia in ether. The ethereal solution thus obtained may be made of any degree of concentration, as recently precipitated quinia is soluble, according to Bussy and Guibort, in ether in all proportions. The solution as usually employed is made of the strength of one grain of the alkaloid in five minims. A practical formula for the preparation of this solution is given by Charles Rice, published in Amer. Jour. Pharm., July, 1871.

C. I. Rademaker prepares the sulphocarbolate of quinia by

decomposing sulphate of quinine with a solution of carbolate of lead. The solution of sulphocarbolate of quinia in a mixture composed of three parts of water and one of alcohol, crystallized after two months' standing in crystalline masses resembling perchloride of iron. Two-thirds of the salt had crystallized out of the solution containing about two grains of the salt to a fluid drachm. The salt was soluble in water, less in alcohol, and not deliquescent. Am. Journ. Pharm., July, 1870.

Quinia precipitated by Iodide of Potassium in the presence of Sesquichloride of Iron.—Prof. Maisch, in compounding a prescription into which these compounds entered, observed the formation of a brown precipitate, and, on investigation, came to the conclusion that the precipitate was probably caused by the action of chloride of iron upon iodide of potassium, forming the ferric iodide: $Fe_2Cl_3+3KI=Fe_2I_3+3KCl$; but as it is also quite probable that the third equivalent of I in Fe_2I_3 is loosely combined, the mixture may practically contain I, which will give, with quinia solutions, the same precipitate as is obtained with Lugol's solution. The precipitate was found to contain the elements of quinia and iodine only. Am. Journ. Pharm., Feb., 1871.

Muriate of Cinchonia has been fraudulently put up and sold for sulphate of quinine of the manufacture of Pelletier, Delondre et Levaillant, Paris. The bottles bear the labels and seal of that well-known firm. Mr. Charles Bullock, of Philadelphia, exposed and published the fraud in the American Journal of Pharmacy, Jan., 1871. Chicago Pharmacist, Feb., 1871.

A new Cinchona Alkaloid has been discovered by Howard in the mother liquid, containing the impure alkaloids which are left after the crystallization of sulphate of quinia. On subjecting these impure alkaloids to the action of ether, he evaporated and treated the residue with oxalic acid. After allowing the obtained salt to crystallize from a small quantity of water, the alkaloid was obtained by precipitating the solution with potassa in the form of an oil. Pharm. Zeitung, Mai, 1871.

Sulphocarbolate of Quinia.—C. I. Rademaker, having prepared some sulphocarbolate of quinia by saturating crude sul-

phocarbolic acid with plumbic carbonate, crystallizing the resulting sulphocarbolate of lead, and decomposing this with sulphate of quinia, succeeded in obtaining the salt in well-defined crystals from a solution in 3 parts water and 1 part alcohol, after five or six weeks' standing. The salt was found freely soluble in water, but slightly so in alcohol and not deliquescent. Amer. Journ. Pharm., November, 1870.

Decomposition of Caffeidina.—Strecker reported in 1862 the decomposition of caffeina into caffeidina by caustic baryta. O. Schultzen decomposed the latter alkaloid completely by baryta, into ammonia, methylamia, formic acid, and a crystalline body, $C_6H_7NO_4$. According to Francis Rosengarten the latter is identical with sarcosina. From Ann. d. Chem. und Pharm., Jan., 1871; Am. Journ. Pharm., May, 1871.

Theine.—Lewis Thompson, in a paper on the uses of theine as a therapeutic agent (Medical Times and Gazette), furnishes a very simple process for the manufacture of theine. The infusion is precipitated by subacetate of lead, the filtered solution evaporated to a small bulk, and mixed with its own weight of carbonate of potassium. The theine, which becomes insoluble in the alkaline solution, may be collected and extracted with boiling alcohol, which, after distilling, furnishes crystallized theine. The author gives also a distinctive test for theine, sufficiently delicate to detect the one-thousandth of a grain of that substance, by passing a stream of euchlorine (hypochlorous acid) through a solution of theine, allowing it to evaporate at a steam heat, when a blood-colored substance remains, which, on the application of a few drops of water, forms a beautiful scarlet solution. Druggists' Circular, June, 1871.

VOLATILE BASES.

Aldehydina identical with Collidina.—H. Vohl has established the identity of the aldehydine of Bayer, a volatile base obtained by heating aldehyde-ammonia with urea, with the collidine of Anderson ($C_{16}H_{11}N$), a base belonging to the pyridine series, and obtained by the dry distillation of flesh, horn, bones, and similar nitrogenized organic structures. By fracturing

the aqueous distillates containing the aldehydine of Bayer, and separating by crystallizations the several double platinum salts, he obtained collidine, lutine ($C_{12}H_7N$), and a small quantity of picoline ($C_{14}H_9N$). Arch. d. Pharm., Dec., 1870.

Acridine, a new Organic Base.—Graebe and Caro have discovered an interesting volatile alkaloid, of the formula $C_{12}H_9N$, and named it acridine, from its violent irritating and acrid qualities. It accompanies anthracene, the hydrocarbon from which artificial alizarine is obtained. It is a colorless crystalline substance fusing at 107° C., and boiling at 360° C. It possesses strong basic properties, uniting with acids to form salts. Journ. f. Pract. Chem., No. 14, 1870.

PECULIAR BODIES OF THE ANIMAL ORGANISM.

Peptic Elixirs.—Dr. Hager publishes the following formulæ of the French elixirs of pepsins:

Elixir de Pepsine Digestive de Holtot—Boudault, exécuté d'apres la formule de Dr. L. Crovisart:

℞. Pepsine, with Lactic Acid, . . . 3 grammes.
Distilled Water, ... 50 "
Syrup of Red Currants,
Syrup of Sugar, āā . . . . . 30 "
Spirits of Garus, ... 40 "
Dissolve, mix, and filter.

Elixir de Pepsine.—Pharmacie du Dr. Mialhe, Professeur aggregé à la Faculté de Medecine:

℞. Pepsinated Starch, ... 6 grammes.
Distilled Water, ... 24 "
White Wine, ... 45 "
White Sugar, ... 30 "
Spirits of Wine (33 per cent.), . . . 25 "
Dissolve, mix, and filter.

Elixir Digestif de Pepsine de Grimault et Comp.:

℞. Acidified Pepsine, ... 2.5 grammes.
French White Wine, ... 60 "
Syrup of Sugar, ... 25 "
Spirits of Garus, ... 25 "
Dilute Muriatic Acid,
Citric Acid, āā . . . . . 1 "
Dissolve, mix, and filter.

Pharm. Centralhalle, xi, 185.

The Pepsin Essence of Schering, who has furnished no formula for its preparation, has been recommended on the authority of Liebreich, as a very active preparation.

Hager made some comparative experiments with these four pepsin preparations, on their solvent powers on the fibrin of blood, at a temperature of 30 to 40° C. The solutions of the fibrin were effected in very different intervals of time; it occurred with Schering's essence completely in 45 minutes; with Mialhe's elixir only one-third of it passed into solution in two hours; and by the other two, only one-fifth was taken up. Hager also finds that the French elixirs improve their digestive powers by dilution with water, the large percentage of alcohol which they contain seemingly proving injurious. Schering's preparation is capable of dissolving one-tenth of its weight of blood-fibrin deprived of moisture by pressure between blotting-paper. Ibid.

Preparation of Pepsin.—E. Heintz, having used Scheffer's method of preparation, found that exposure of the preparation to air for a sufficient length of time will remove the unpleasant smell which the liquid usually possesses. He is also satisfied that the peptic can be concentrated at a temperature not exceeding 55° C., without damaging the power of the preparation for the solution of blood-fibrin. Pharm. Centralhalle, March, 1871.

Liquid and Saccharated Pepsins.—E. Scheffer recommends, on account of his liquid pepsins prepared by formula published in Am. Journ. Pharm., March, 1870, turning mouldy in warm weather, to increase the proportion of glycerin 50 per cent., without changing the quantities of mucous membrane and muriatic acid. The resulting preparation was found to keep well. For the preparation of dry pepsin, he recommends to express strongly the precipitated pepsin, and to mix it in the damp state, with sufficient sugar of milk that 1 grain of the saccharated pepsin shall dissolve 12 grains of albumen. Although easily soluble when recently precipitated, it becomes difficultly soluble in cold water, more in water of 80° F., but quickly on the addition of a little acid (hydrochloric or lactic). To make

liquid pepsin from the dry saccharated pepsin, he prepared the following formula: Saccharated pepsin, 64 grs.; water, 5 fluid ounces; hydrochloric acid, 1 fluid drachm; shake in a bottle until the milk sugar and pepsin are completely dissolved, then add glycerin 3 fluid ounces, and filter. A colorless liquid is obtained, 1 fluid ounce of which is capable of dissolving $1\frac{1}{2}$ drachms of coagulated albumen. Am. Journ. Pharm., Jan., 1871.

Glycerin Extracts of Pepsin and other Ferments.—M. Poster has repeated the experiments of Von Wittich upon the isolation of pepsin, &c., by means of concentrated glycerin, and found also that the salivary glands and pancreas yielded to glycerin a starch-converting ferment, and a "laden" pancreas gave a ferment capable of dissolving fibrin in an alkaline medium. Ungerminated barley gave up a non-proteid diastase; almonds a ferment acting on amygdalin. The author thinks that glycerin offers advantages not presented by any other medium in the preparation of liquid pepsin of palatable form, great permanency and certainty of action. Pharm. Journ., London, Jan., 1871.

Chloroform as a test for Bile in Urine.—Cunisset adds to 40 to 50 grs. of urine contained in a test-tube 5 to 6 grammes of chloroform. After a thorough shaking of the mixture, if urine contains bile, the lower chloroformic layer assumes a fine yellow color, the upper layer presenting quite a different appearance. Zeitsch. d. allg. Oest. Apoth. Vereins.

A Blue Coloring Matter in Bile.—When bile is shaken with chloroform, and the more or less yellow chloroformic solution treated with a weak solution of soda, until decolorized, then neutralized with muriatic acid, there is obtained a liquid of two layers, the yellow chloroformic, and another holding the blue coloring matter in suspension. This substance is insoluble in chloroform and acids, but soluble in alkalies, the solution becoming colorless, or only slightly yellow. The discoverer, E. Ritter, finds it not an invariable constituent in human bile, in that of the ox, sheep, swine, dog, and cat. Further researches are

promised by the author. Wittstein's Vierteljahresschr., 1871, Hft. 1.

Cryptophanic Acid.—This is a new organic acid found in human urine by Dr. Thudichum, the presence of which the author considers the cause of the acid reaction usually exhibited by urine. To extract it from urine, the latter is rendered alkaline with milk of lime, filtered, acidified with acetic acid, and evaporated to the consistence of syrup. After standing some time the supernatant liquor is poured off from the crystalline deposit, and is then mixed with strong alcohol, which precipitates the dark-colored impure calcium salt. This is purified by repeated solutions in water, filtration, and reprecipitation with alcohol. The solution of this salt is finally mixed with acetate of lead, the resulting cryptophanate of lead precipitated by the addition of alcohol, and decomposed by an equivalent quantity of sulphuric acid. The acid is a colorless, gummy mass, soluble in water, decomposing the carbonates with effervescence. The aqueous solutions of the earthy salts give, amongst other reactions with mercury nitrate, a voluminous white precipitate. The ordinary estimation of urea by Liebig's process, is thus shown to be liable to errors, and to require a correction for cryptophanic acid, which has probably increased all values for urea by from 5 to 10 per cent. Cryptophanic acid may be considered a dibasic acid of the formula $C_5H_9NO_5$, or may be represented as a tetrabasic acid with the formula $C_{10}H_{18}N_2O_{10}$. Pharm. Journ. and Drug. Circ., Sept., 1870.

The Synthesis of Neurin has been accomplished by Wurtz. On heating a mixture of oxychloride of æthylene $= C_4H_5ClO_2$, with trimethylamia $= C_6H_9N$ in a sealed tube, the product is hydrochlorate of neurin $= C_{10}H_{13}NO_2+HCl$, which contains exactly the elements of the compounds from which it was generated. From Compt. Rend., lxv, 1015; lxvi, 773; Wittstein's Vierteljahresschr., July, 1870.

Lutein is the name given by Thudichum (Proc. Roy. Soc., No. 608) to the crystallizable yellow coloring principle found both in the animal and vegetable kingdom, as for instance, in

the yolk of eggs, in the yellow fat of butter, in annatto, in the carrot, and in the anthers and petals of many plants. Lutein is insoluble in water, soluble in alcohol, ether, and chloroform. Nitric acid turns it blue, passing again to yellow. It appears identical with the hæmatoidin described by Städeler and Holm. From Journ. f. pract. Chem., 1869; Arch. d. Pharm., Aug., 1870.

Products of the decomposition of Legumin by boiling Sulphuric Acid.—The legumic acid of Ritthausen, the product of the decomposition of legumin and conglutin turns out, after further research on part of the author, to consist of two homologous amine acids: aspartic acid $C_8H_7NO_7$, and glutinic acid $C_{10}H_9NO_8$. By the action of nitrous acid, products are obtained which are also two homologous acids: malic and glutic acid. It is not improbable that the protein bodies of the animal organism will also yield aspartic acid when boiled with sulphuric acid. Journ. f. pr. Chem., 1869; Arch. d. Pharm., Oct., 1870.

Hæmatosin, a new Remedy.—Professor Tabourin, of Lyons, proposed the coloring matter of blood as a remedial agent. To prepare it, blood is thickened by the addition of an inactive salt, the resulting magma subjected to pressure, and the press-cake extracted with alcohol containing 2 to 3 per cent. of an acid. The hæmatosin is dissolved and held in solution while globulin is deposited, and on neutralizing the alcoholic liquid, hæmatosin separates in voluminous reddish flocks, which are collected on a filter, and washed successively with water, alcohol, and ether. When dry and pulverized it appears as a brown, odorless, and tasteless powder, soluble either in acidulated or alkaline alcohol. It is supposed to be readily soluble in blood, which is alkaline, and assists in the formation of blood-corpuscles, as it is claimed to contain 10 per cent. of iron. Pharm. Centralhalle, May, 1871.

Sulpho-urea.—It is well known that a solution of cyanate of ammonium, when heated, is converted into urea:

$$NH_4O+C_2NO=C_2H_4N_2O_2.$$

Sulphocyanide of ammonium, when similarly treated, does

not yield the corresponding sulpho-urea, $C_2H_4N_2S_2$. Reynolds (Journ. of the Chem. Soc., 2 ser., vii, 1) succeeded in effecting the metamorphosis by exposing the salt contained in a sealed tube to a temperature of 170° C. Sulpho-urea crystallizes in the form of white, silvery rhombic needles and prisms, is inalterable in air, soluble in water and alcohol, and possesses a slightly bitter taste. When heated for a few hours to a temperature of 140° C., it changed again to sulphocyanide of ammonium. Sulpho-urea combines, analogous to its prototype, urea, with nitric acid, oxalic acid, oxide of silver, oxide of mercury, &c. Wittstein's Vierteljahresschr., July, 1871.

Tests for Albumen.—Almén, in a treatise on the sensibility of the different methods employed for the detection of albumen in urine, gives the following results arising from his investigations:

1. In testing urine for albumen by boiling and addition of acetic acid; not more than 2 drops of the acid should be added to 15 c.c. of the urine. When nitric acid is employed, it is necessary to use as much as 0.5 c.c. of the acid to 15 c.c. of urine.

2. This method will indicate 0.2 in 1000 parts with certainty, and the application of nitric acid is advantageous.

3. Heller's test possesses a greater sensibility, detecting 0.05 of albumen in 1000 parts of urine, or 1 grain in 1000 of the normal daily quantity; but the most sensitive of all is the tannin test (a weak spirit containing 2 per cent. of tannin), which will discover, if added to the urine in the proportion of one-sixth of its volume, half a grain of albumen in the last named quantity. From N. Jahrb. f. Pharm.; Pharm. Centralhalle, Jan., 1871.

Soluble Albumen, used as a mordant for dyes on goods, has been found to possess unequal capacities of coagulation. According to Monier, sunlight exerts an essential influence. Albumen, if evaporated during exposure to direct sunlight, gave a product which was not coagulable by heat; while on the other hand, albumen evaporated in diffused daylight, a coagulable albumen was obtained. Non-coagulable albumen may be made

again coagulable with heat, on the addition of a small quantity of acetic, formic, tartaric or citric acid. From Pharm. Journ. and Transact., 1869; Arch. d. Pharm, Juli, 1870.

Albumen from Blood.—Albumen is now produced on a large scale at Pesth, Hungary, and in North Germany, from the blood of animals. The serum separating when the blood coagulates, contains chiefly albumen. The best quality of albumen thus obtained is transparent and soluble in water, and is used for mordanting yarns and cloth. At Pesth blood is dried in flat iron pans, by exposure to air at a temperature of 100 to 112° Fahr. The yield is 110 pounds of albumen from 3000 pounds of blood. Chemist and Druggist, No. 8, 1871.

Dr. Poleck calls attention, in Dingler's Polyt. Journ., to a peculiar change which takes place in flour kept in casks. The gluten of the flour loses its capability of being converted into a good dough, and acquires a peculiar musty smell. The cause of this is referred to the absence of air, therefore the remedy is obvious. Chemist and Druggist, No. 8, 1871.

HYDROCARBONS.

Composition of American Petroleum.—J. C. Blas, Jr., in a paper giving a history of the production and chemical composition of American rock-oil, states that Pelouze and Cahours (Annal. de Chim. et de Phys.) have separated from the crude oil thirteen liquid carbo-hydrogens, their density, boiling-point, and volume equivalent being each different, while several links forming this series were heretofore unknown. They are homologues of marsh gas, and have a composition corresponding with the formula C_nH_{n+2}:

1. Hydride of Butyl, $C_8\overset{H_9}{H}$ } boiling-point, 10° C.; density, 0.6 at 0° C.
2. Hydride of Amyl, $C_{10}\overset{H_{11}}{H}$ } boils at 17° C.; density, 0.628 at 17° C.
3. Hydride of Caproyl, $C_{12}\overset{H_{13}}{H}$ } boiling-point, 68° C.; density, 0.669° at 16° C.
4. Hydride of Oenanthyl, $C_{14}\overset{H_{15}}{H}$ } boils at 92 to 94° C.; density, 0.669 at 15° C.
5. Hydride of Capryl, $C_{16}\overset{H_{17}}{H}$ } boiling-point, 116 to 118° C.; density, 0.726 at 15° C.

6. Hydride of Pelargyl, $C_{18}{}^{H_{19}}H$ } boils at 136 to 138° C.; density, 0.741 at 15° C.

7. Hydride of Rutyl, $C_{20}{}^{H_{21}}H$ } boiling-point, 158 to 162° C.; density, 0.757 at 15° C.

8. Hydride of Undecyl, $C_{22}{}^{H_{23}}H$ } boils at 180 to 182° C.; density, 0.766 at 20° C.

9. Hydride of Lauryl, $C_{24}{}^{H_{25}}H$ } boiling-point, 198 to 200° C.; density, 0.778 at 20° C.

10. Hydride of Cocinyl, $C_{26}{}^{H_{27}}H$ } boils at 216 to 218° C.; density, 0.796 at 20° C.

11. Hydride of Myristyl, $C_{28}{}^{H_{29}}H$ } boiling-point, 236 to 240° C.; density, 0.809 at 20° C.

12. Hydride of Benyl, $C_{30}{}^{H_{31}}H$ } boils at 255 to 260° C.; density, 0.825 at 19° C.

13. Hydride of Palmityl, $C_{32}{}^{H_{33}}H$ } boiling-point, 280 to 300° C.

These carbo-hydrogens are attacked by chlorine with the elimination of hydrogen and the formation of a hydrochloric ether of the corresponding alcohol. By the prolonged action of chlorine, more strongly chlorinated products are obtained, with the disengagement of hydrochloric acid; for example:

Chloride of Caproyl $= C_{12}{}^{H_{13}}Cl$ }

Bichloride of Caproyl $= C_{12}{}^{H_{12}}Cl_2$ }

Trichloride of Caproyl $= C_{12}{}^{H_{11}}Cl_3$ } and so on.

The higher members of this group present analogous characteristics, and the various homologous alcohols of the ethyl series may be formed from their hydrochloric ethers. Further, the latter compounds, when subjected to the action of an alcoholic solution of ammonia in sealed tubes, will furnish complete series of the ammonia homologues of methyl and ethyl compounds. Arch. d. Pharm., Jan., 1870.

Illuminating Gas from Petroleum.—Hirzel has succeeded in utilizing the residue left from the rectification of the crude oil, in the production of an illuminating gas, by conducting the oil into a red-hot retort, the gas passing through an ascending tube into a receiver. No tar is separated in the pipes, and the gas is free from carbonic acid, sulphurous and ammoniacal compounds, therefore requiring no purification. Its sp. grav. is 0.698, coal gas = 0.42, and its illuminating power $4\frac{1}{2}$ to 5 times

greater than ordinary oil. Wittst. Viertelj. Schr., 1870, 281–286.

Testing of Petroleum.—F. C. Calvert, F.R.S., &c., calls attention to the imperfections of the English petroleum test, by proving experimentally a difference of 4 or 5 degrees in the indication of two thermometers, the bulb of one being immersed $1\frac{1}{2}$ inches below the surface of the petroleum, and the other $\frac{1}{2}$ inch below; also a variation of 5 to 8 degrees in the exploding-point of the petroleum, according to whether 15 or 30 minutes had been consumed to heat the petroleum to the exploding or flashing-point. To obtain correct results the author recommends to heat the water in the outer vessel 10 degrees above the flashing-point of the spirit (approximately tested) in the apparatus described in the act, removing the flames, and then placing the can in the water, filling it at once carefully with the petroleum spirit. The thermometer should then be placed with the bulb half an inch below the surface of the spirit, and the flashing-point ascertained in the usual manner. Lond. Pharm. Journ.; Drug. Circ., July, 1870.

To detect *sulphur* in coal gas, let a platinum basin be filled with half a litre of water, and the basin be heated over a Bunsen burner until all the water is evaporated. The basin will be found to be coated on the outside, where it was struck by the flame, with a greasy-looking substance, which, on being washed off with distilled water, and tested, will prove to be sulphuric acid. Drug. Circ., Nov., 1870.

AROMATIC HYDROCARBONS.

Production of Benzol from Illuminating Gas.—The illuminating gas obtained from certain kinds of coal contains, according to Caro, Clemm, and Engelhorn (Dingler's Polytech. Journ., xc, 333), ten times the quantity of benzol and its homologues, toluol, xylol, cumol, &c., as is usually obtained from the amount of coal, yielding that quantity of gas. As coal tar is at present the only source from which benzol is obtained for the manufacture of aniline colors, the authors propose the ex-

traction of benzol from illuminating gas, and propose further, in order to compensate the resulting considerable loss of the illuminating capacity of the gas, by impregnation with petroleum naphtha. Wittstein Vierteljahresschr, July, 1870.

Test for Benzol from Coal Tar.—In order to distinguish the benzol derived from coal tar, which is much used in toxicological analysis, from the benzol obtained from petroleum, which is entirely unfitted for that purpose, Dragendorff recommends the generation of nitrobenzol by the action of fuming nitric acid upon the benzol of coal tar, and the solvent action of the latter upon asphaltum, with which it readily forms a tarry liquid, as proper tests. Petroleum benzol is incapable of the generation of nitrobenzol, or dissolving asphaltum to any extent. Arch. d. Pharm., Feb., 1871.

ETHYLIC ALCOHOL AND ETHERS.

Preparation of Spirits from Lichens.—According to Dr. Stahlschmidt, lichens, marine as well as terrestrial, may be usefully applied for this purpose. The cellulose of the lichens is converted into glucose by boiling with 7 to 10 per cent. of the weight of the mass of hydrochloric acid (sp. gr. 1.165), by the aid of steam; the acid is saturated with chalk and saccharine matter brought to fermentation. Bay. Indust. u. Gew. Bl., 1870.

Products of the Alcoholic Fermentation of Sugar Beet.—Drs. Pierre and Ed. Truchot have found in the fermented juices of sugar beet, aldehyde, ethylic alcohol, acetic ether, propylic, butylic, and amylic alcohols. In the residue, after distillation, was found, aside of considerable quantities of butylic and amylic alcohols, a large quantity of propylic alcohol. From Journ. f. Pract. Chem., 1869; Arch. der Pharm., Aug., 1870.

To distinguish genuine Rum from the artificial, Dr. Wiederhold recommends the following simple method: Mix ten parts of the rum with three parts of concentrated sulphuric acid, and allow the mixture to stand twenty-four hours. If the article is genuine the characteristic aroma is still retained, while

that of the artificial production is entirely obliterated. Zeitschr. d. allg. Oest. Apoth. Vereins, Feb., 1871.

Test for Water in Ether.—J. Romei, in Viertelj. Schr. für Pract. Pharmacie, recommends carbolate of potassium, which, when perfectly dry, is nearly insoluble in anhydrous ether. Ether containing only $\frac{1}{4}$ per cent. of water will dissolve a portion of the salt, and the insoluble part will assume, after a time, a reddish-brown color. Pharm. Zeitschr. für Russl., Nov., 1870.

The theory of Etherization, by means of hydrochloric acid, may be exemplified by passing hydrochloric acid through an alcoholic solution of an organic acid, when an ether of this acid, or, in other words, a combination of the acid with oxide of ethyl is effected. Friedel explains the process on the rationale that a chloride of the acid is first produced, which is subsequently transformed by the action of alcohol into hydrochloric acid and the ether. Acetic acid, for instance, when converted into ether, furnishes, according to his views, the following successive equations: $C_4H_3O_3$, $HO+HCl=C_4H_3O_2Cl$, $2HO$; and $C_4H_3O_2Cl+C_4H_5O$, $HO=C_4H_5O$, $C_4H_3O_3+HCl$. Pharm. Zeitschr. für Russl., Nov., 1870.

MONATOMIC ALCOHOLS AND ETHERS.

METHYLIC ALCOHOL.

Methylic Alcohol.—As pure wood spirit does not yield iodoform with potassa and iodine, its formation points to the presence of ethylic alcohol, acetone, &c., as impurities. A. Lieben, in Annal. d. Ch. u. Ph., suppl., vii, 137; Amer. Journ. Pharm., July, 1870.

ETHYLIC ALCOHOL AND ETHERS.

Action of Chlorine upon Absolute Alcohol.—Streitt and Franz (Arch. d. Pharm., Aug., 1870) have shown, that on exposing absolute alcohol into which a current of chlorine was passing for the preparation of chloral, to direct sunlight, the liquid was observed at a temperature of 62° C. to detonate with the evolution of light, and assume a black color, depositing on

repose a black powder. The cause of these phenomena is explained by Berlandt (Arch. d. Pharm., Nov., 1870), who assumes that the carbohydrogen, which is formed by the action of chlorine upon alcohol, is decomposed at a sufficiently elevated temperature, induced by a rapid current of the gas, into muriatic acid and carbon. The author has determined experimentally that the presence or absence of light does not influence the result, inasmuch as a weak current will produce negative results, while a strong and rapid current, will manifest the phenomena of heat and light in absolute darkness.

Preparation of Organic Sulphur Compounds by means of Hyposulphite of Soda.—R. Otto has shown that when ethylic alcohol is heated for twenty hours, in a sealed tube, with a hot concentrated solution of hyposulphite of soda, it is converted into mercaptan. Iodide of ethyl, heated for two hours to 150°, in a sealed tube with the solution of hyposulphite of soda, is converted into sulphur compounds, and iodide of sodium is formed. Ann. Chem. u. Pharm., 1870.

Spirit of Nitrous Ether.—The process of the B. P. is that usually known as Redwood's: it consists in distilling a mixture of rectified spirit, nitric and sulphuric acids, together with copper wire in a glass retort, and in operating in pharmacopœial quantity, 15 fluid ounces are ordered to be drawn over. A. E. Tanner (Pharm. Journ., London, Dec., 1870) finds that he is unable to obtain a larger amount of distillate, at the limit of temperature designated (180°), than 11 fluid ounces, except by the addition of more nitric acid than the Pharmacopœia allows. The author allows that either more spirit is used in the first part of the process than is necessary, or, what amounts to the same thing, too little nitric acid, and therefore recommends a proportionate increase of nitric acid. Am. Journ. Pharm., Feb., 1871.

Acetic Ether.—For the detection of alcohol in acetic ether, Frederking (Pharm. Zeitsch. f. Russl.) recommends the use of glycerin. Equal volumes of acetic ether and glycerin are shaken together, and any alcohol contained in the ether will pass over to the glycerin, augmenting its volume and diminishing that of the ether. Pharm. Zeitung, Jan., 1871.

Chloræthylidene, $C_4H_4Cl_2$. A new anæsthetic agent, exhibiting a close resemblance to chloroform and chloride of ethyline (Dutch liquid) in their physical and chemical relations. Chloræthylidene boils at 58–59° C., and its specific gravity is 1.182–1.185. It is prepared:

1. By adding gradually aldehyde to pentachloride of phosphorus contained in a retort, kept cool, oxychloride of phosphorus and chloræthylidene are formed (Wurtz), $C_4H_4O_2+PCl_5=C_4H_4Cl_2$ and PO_2Cl_3.

2. By the action of chlorine on chloride of ethyle (Regnault), $C_4H_5Cl+Cl_2=C_4H_4Cl_2$ and HCl.

Chloræthylidene resembles chloride of ethylene (with which it appears isomeric), and chloroform in odor and taste, but differs materially in its boiling-point and specific gravity. Chloride of ethylene boils at 85°C., and has a specific gravity of 1.250–1.252; chloroform boils at 61° C., and its specific gravity is 1.498–1.500. From Pharm. Centralhalle; Pharm. Zeitschr. für Russl., Nov., 1870.

Chloræthylidene.—E. Schering furnishes the following data on the properties of this compound. Chloræthylidene is a colorless, mobile fluid, having an agreeable ethereal odor and a sweetish aromatic taste. It is soluble in all proportions of alcohol, ether, and fatty oils. It is insoluble in water, its gravity at 17° C. is 1.24, and boils at 60° C. It burns with a smoky green-edged flame. Chloræthylidene bears the greatest resemblance to chloride of ethylene, but differs essentially, aside from its lower specific gravity and boiling-points, by its behavior towards an alcoholic solution of potassa, upon which it has no action, while chloride of ethylene is decomposed with the disengagement of gaseous chloride of vinyle and the separation of chloride of potassium. According to Dr. O. Liebreich, it is an active anæsthetic, inducing a total state of insensibility to pain without loss of consciousness, and the production of vomiting on recovering from its influence. Arch. d. Pharm., Nov., 1870, p. 160.

Typical relations of Chloræthylidene.—This new anæsthetic, which was first introduced into practical use by Liebreich, is regarded as a chlorine derivative of acetaldehyde. A formula

expressing the true constitution of aldehydes being at the present state of our knowledge hardly a thing possible, and judging from the varied metamorphoses which they assume in their different molecular groupings, therefore typical formulas are offered, as the only means at hand to furnish a clear view of the subject. It is found that the series of compounds obtained on passing an unlimited quantity of chlorine regularly and slowly through chloride of ethyle, were the products of a simple substitution. These compounds separated from each other by fractional distillation, are grouped by P. Elsner (Arch. d. Pharm., Feb., 1871), as represented by the following typical formulæ:

C_4H_5Cl	Chloride of Ethyl	$-H+Cl$.
$C_4H_4Cl_2$	Chlorœthylidene	$-H+Cl$.
$C_4H_3Cl_3$		$-H+Cl$.
$C_4H_2Cl_4$		$-H+Cl$.
$C_4H_1Cl_5$		$-H+Cl$.
C_4Cl_6	Sesquichloride of Carbon.	

Test for Chloroform in Chlorœthylidene.—A solution of chlorœthylidene in two parts by volume of alcohol, mixed with an alkaline solution of tartaric acid and oxide of copper, and boiled about two minutes, will effect no change, but if chloroform is present, the red suboxide of copper is thrown down. From Pharm. Centralhalle; Pharm, Zeitschr. für Russl., Nov., 1870.

Chloral Hydrate.—According to F. A. Flückiger, the property of commercial chloral hydrate to absorb moisture, and its stinging odor, are due to insufficient purification on a large scale, as the last traces of impurity cannot be removed by fusing and redistilling it. To accomplish this, Dr. F. recommends recrystallization, using bisulphide of carbon as the solvent. 45 parts of this liquid dissolve at 15° to 18° C. but one part of chloral hydrate, whereas it takes up about one-fifth its weight at a temperature somewhat below the boiling-point. When the hot solution is allowed to cool slowly, beautiful crystals are obtained, which are readily freed of the last traces of the solvent, by exposing them in thin layers to the air. Thus obtained the chloral hydrate gives no acid reaction and does not attract

moisture. N. Jahrb. für Pharm., 1870; Amer. Journ. Pharm., Sept., 1870.

Preparation of Chloral with the aid of Iodine.—Springmühl proposes (Polytech. Notitzbl.) to accelerate the tedious process of the manufacture of chloral by the application of iodine. He employs to every 500 grm. of alcohol, one grm. of iodine. After passing a stream of chlorine through the iodinized alcohol for twelve hours, caustic lime is added and after filtration distilled. At the temperature of 72° C., iodide of ethyl distils over, and at 110–115° C., chloral passes over, which is collected separately. Pharm. Zeitung, Feb., 1871.

Chloral Hydrate in Chemical Analysis.—When a solution of gold or platinum is mixed with chloral hydrate, and an excess of solution of potassa, and the mixture boiled a few minutes, complete reduction of these metals to the metallic state is effected; chloroform being eliminated at the same time, which while enveloping the reduced metal will admit of an easy and expeditious washing by decantation. Pharm. Centh., 1870, No. 42.

Chloral Hydrate.—To distinguish this from chloral alcoholate, C. Umney recommends the quantitative determination of the chloroform value of the specimen in the following manner:

Take 500 grains of the salt and dissolve in about one ounce of distilled water; transfer to a 1000-grain graduated tube, and make up the measure of the solution to 700 grain measures. To this add solution of caustic ammonia (.891) until the whole measures 1000 grains. Agitate: immerse the tube in warm water to assist in the reaction, and set aside for twelve hours.

Upon examination the fluid will be found to have perfectly separated into two layers, the lower being chloroform (from fine specimens of the hydrate nearly colorless), the upper a deep cherry colored solution of formiate of ammonia.

If the specimen be chloral hydrate, the chloroform layer should not measure less than 235 grain measures, equal to 351.7 grains by weight, and 70 per cent. of the chloral compound employed.

With chloral alcoholate, the chloroform layer will be about 200 grain measures, or 299 grms. by weight, equivalent to 60 per cent. by weight of the chloral alcoholate. L. Pharm. Journal; Pharmacist, Nov., 1870.

Test for Chloral Alcoholate.—To detect its presence in chloral hydrate, Hager recommends Lieben's iodoform test. Pharmaceutical Journ.; Drug. Cir., Sept., 1870.

In a paper on *Chloral* read before the Liverpool Chemists' Association by Alfred H. Mason, the author announces as a distinguishing test, between hydrate chloral and alcoholate of chloral, the solubility of the latter in chloroform, in which the hydrate is altogether insoluble. Therefore if twenty grains of the chloral compound is soluble in thirty minims of cold chloroform, it is not the hydrate. In cold water the alcoholate is nearly insoluble, while the hydrate is perfectly soluble. From Pharm. Journ., London, 1871; Am. Journ. Pharm., Mar., 1871.

Metachloral. — Dr. Richardson exhibited to the Medical Society of London, a substance known among chemists as metachloral. It is a white powder, insoluble in water and alcohol. It is isomeric with chloral, and is produced when chloral remains in contact with sulphuric acid at 140° Fahr. It is also formed spontaneously from chloral when the latter is kept for a long time in a stoppered bottle, or where a quantity of water insufficient to produce the hydrate is added to it. Heat converts metachloral into liquid chloral, which becomes the hydrate on the addition of a sufficient quantity of water.

It is believed from experiments made by Dr. Richardson on the lower animals, to possess mild narcotic properties, and owing to its affinity for water to act as a caustic, and that this fact, taken together with its soothing effect, may be turned to practical value. From Medical Times and Gazette, Dental Cosmos, May, 1871.

Chloral.—According to C. A. Martius and P. Mendelssohn-Bartholdy, when equal equivalents of chloral and anhydrous ethylic, methylic, butylic, or amylic alcohol, or even mercap-

tan, are mixed together, chemical combination takes place, heat is set free, with the formation of solid compounds, which may be viewed as intermediate trichloracetals. The ethyl combination boils at 115° C., solidifies at 40° C., sp. gr. 1.143; soluble in cold water, but far more in ether, alcohol, acetic ether, and petroleum ether. The methyl compound boils at 98° C. The amyl compound boils at 143° C., is solid at 25° C., sp. gr. 1.234; is not perceptibly soluble in water, but readily in alcohol and ether, from which solutions it is obtained in the crystalline state. Ber. Deut. Chem. Ges., No. 9, 1870.

A new chloral is described (Bericht. d. Deutsch. Chem. Ges.) as being obtained by passing dry chlorine in refrigerated aldehyde. The product, which is isolated by means of fractional distillation, boils at 160 to 180° C., and forms an oily, colorless liquid, having a great affinity for water, forming with it a crystalline hydrate. Krämer and Pinner, the discoverers of this new chloral, regard it as croton chloral. Croton chloral hydrate melts at 70° C.; when treated with potassa, a heavy, oily liquid, the allyl-chloroform, subsides, which commences to decompose soon after its formation. By the action of fuming nitric acid, its behavior appears analogous to chloral, which forms trichloro-acetic acid, while this new chloral forms the trichloro-crotonic acid, which boils at 234–236° C., and which gradually passes into the crystalline state. The analysis of this acid gave the formula, $C_8H_3Cl_3O_4$. Arch. der Pharm., July, 1871.

Bromal hydrate, $C_4HBr_3O_2+4HO$, which, according to E. Steinhauer, resembles chloral hydrate in its action upon the animal organism, crystallized, according to E. Schering (Arch. d. Pharm., July, 1870), in the form of white needles, or by retarded crystallization assuming the shape of triclinic, colorless crystals. Bromal hydrate possesses an odor and taste resembling chloral hydrate, and is soluble in water and alcohol. Experiments instituted with it on animals, have shown that its action is more that of an anæsthetic than a hypnotic.

Physiological Action of Hydrate of Bromal.—There is a valuable paper, by Dr. E. Steinauer, of Berlin, in the last volume

of "Virchow's Archiv," on the action of hydrate of bromal on animals and man. The experiments were made in the Berlin Pathological Institute, and were under the immediate observation of Liebreich himself. The hydrate bromal, according to the observations detailed, when administered to animals, undergoes a similar change to that undergone by chloral, being converted by the alkalies of the blood into bromoform. The author has found good effects from it in epilepsy, and in soothing the pains in tabes dorsalis. The method of administration which he has ultimately employed is, first, in the morning and at midday, a powder, containing about 14 grains sodæ bicarb.; then, in the evening, two or four pills, containing each from one-half to one and a half grs. of bromal. Medical Press and Circular, Dublin, Aug. 24; Am. Journ. Pharm., Nov., 1870.

AMYLIC ALCOHOL AND ETHERS.

Nitrite of Oxide of Amyl.—This compound, commonly termed nitrous amylic ether, $C_{10}H_{11}O.NO_3$, presents a yellowish liquid, of spec. gr. 0.877, boiling at 96° C.; of a peculiar spicy odor, and having a fruity taste. Its vapor burns with a yellow, luminous, nearly smokeless flame. It is soluble in alcohol and ether, but insoluble in water. It is therapeutically employed against asthma, by inhaling its vapor from a few drops poured upon a handkerchief mixed with air. When inhaled but for a short time intense headache will result. Arch. der Pharm., Nov., 1870, p. 161.

Preparation of Nitrite of Amyl.—Prof. J. M. Maisch furnishes the following process for the preparation of amylo-nitrous ether: Amylic alcohol, purified according to Hirsch's method (Am. Journ. Pharm., 1862, pp. 139, 328), is introduced with an equal bulk of nitric acid into a capacious glass retort, and a moderate heat is applied, and very gradually increased. As soon as the mixture approaches boiling, the fire is removed, and the reaction allowed to continue. As soon as the thermometer, inserted into the tubulus, rises above 100° C., the receiver is changed, the distillate now becoming more and more mixed with ethyl-amylic ether and nitrate of amyl, readily perceived by

the change in odor. The distillate obtained below 100° C. is now agitated with an aqueous solution of caustic or carbonate of potassa, to remove free acids, and after separation the oily liquid is introduced into a clean retort, and again slowly heated. The first portion coming over contains the amylic aldehyde. When the very slowly increased heat has risen to 96° C., the receiver is again changed, and the distillate now collected as nitrite of amyl, until the thermometer reaches 100° C., when the distillation is stopped. Am. Journ. Pharm., April, 1871.

Nitrite of Amyl has been proposed by Guthrie as a resuscitative in drowning, suffocation, and fainting. N. Y. Med. Gaz., June, 1870.

ALLYL ALCOHOL AND ETHERS.

Allylic Alcohol.—Oxalic acid, as is well known, is decomposed when heated with glycerin into carbonic and formic acids, and the latter obtained by the addition of water, or more oxalic acid and subsequent distillation. On continuing the heating without these additions, allylic alcohol is generated, which distils over. The rationale of this process is that the formic acid reacts upon the glycerin, allylic alcohol $C_6H_6O_2$, water and carbonic acid being formed. The purified product amounts to one-fifth of the oxalic acid employed.

Allylic alcohol presents a colorless liquid, possessing a pungent smell, and boiling at 91° C. From Comp. Rend.; Arch. d. Pharm., Nov., 1870.

SECONDARY AROMATIC ALCOHOLS.

Synthesis of Phenol.—When, according to Berthelot, acetylene=C_4H_2 is treated with fuming sulphuric acid, sulpho-acetylenic acid is obtained. On fusing the potash salt of this acid with potassa, phenol is generated with the evolution of oxygen: $3C_4H_2+O_2=C_{12}H_6O_2$. Journ. de Pharm. et de Chim., 1869, x, 89; from Wittstein's Vierteljahresschr., July, 1870.

Phenyl Brown.—The so-called phenicienne, or phenyl brown, is, according to Bolley and Hummel, a compound of binitrophenol, and a peculiar amorphous substance, resembling humic

and ulmic substances. It is produced by the action of a mixture of nitric and sulphuric acids (one part of the former, spec. gr. 1.35, and two of the latter concentrated) on phenol. A substance, thick like tar, sometimes grainy, and a deep red-colored liquid are formed. From the latter, when poured into water, a pulverulent brown-colored substance separates, having all the characteristic properties of com. phenicienne. Drug. Circular, July, 1870.

Sulphocarbolates.—T. H. Hustwick (Pharm. Jour. and Trans., April 22, p. 845), instead of preparing the sulphocarbolates of zinc, copper and iron by decomposition, saturates dilute sulphocarbolic acid with oxide of zinc, prepares the copper salt by saturation with carbonate of copper, and the iron salt by the action of the dilute acid upon fine iron wire. The salts thus obtained are equally pure, saving time and labor. Am. Journ. Pharm., June, 1871.

New Test for Carbolic Acid.—According to Joseph M. Hirsh, minute quantities of carbolic acid may be detected in solution by adding a drop of the tincture of ferric chloride, when a purple coloration will be perceived. If the quantity present is large, a purple precipitate will be produced, which, upon the addition of glycerin, dissolves with an olive color. "The Arts" and Drug. Circular, July, 1870.

Cholesterin in Wool Fat.—Ernst Schulze has corroborated Hartmann's inference that fat contains cholesterin. He obtained the fat by exhausting sheep's wool with ether, and cholesterin was separated from its soap by the use of ether. From Zeitschr. f. Chem.; Am. Journ. Pharm., April, 1871.

Bromopicrin of Bolas and Groves is obtained by slaking 4 parts of quicklime with 50 parts of water, transferring the mixture into a glass alembic, adding gradually six parts of bromine, then one part of picric acid, and distilling rapidly. The first quarter of the distillate contains the bromopicrin $C_4Br_3NO_4$, and solidifies on cooling to a crystalline mass, which melts at 10° C. Its spec. grav. is 2.811, it is not decomposed by sulphuric acid, is soluble in benzole, chloroform, ether, and alcohol. It can only

be distilled in vacuo without change. Ann. der Chem. und Pharm., clv, 253.

TRIATOMIC ALCOHOLS AND ETHERS.

Chloroform.—On the assumption that chloral hydrate is converted through the alkalinity of the blood, while passing through the organism, into chloroform and formic acid, Schacht prepared some chloroform by the reaction of potassa upon hydrate of chloral. He found the product quite free from alcohol, of same specific gravity and boiling-point, as the chloroform prepared in the ordinary way. It was not changed when exposed to sunlight for four weeks in glass tubes freed from air and hermetically sealed; but when exposed to light with the access of air, decomposition ensued in a few days. Arch. d. Pharm., cxciii, 31.

Decomposition of Chloroform.—The statement of Dr. Hager that chloroform prepared from pure chloral hydrate is not decomposed by light and air is contradicted by Biltz, who proves that such chloroform, when absolutely free from alcohol, is decomposed as readily as any other, and attributes Dr. Hager's results due to the presence of some alcohol in the chloroform experimented with. The author considers the presence of two or three per cent. of alcohol in chloroform sufficient to prevent decomposition by light. Pharm. Zeitung; Amer. Journ. Pharm., Sept., 1870.

New Method for the Generation of Chloroform.—By the action of pentachloride of phosphorus upon iodoform, Serullas obtained a liquid which he named protohydriodide of carbon, and which Butlerow assumed to be iodide of methylene, $C_2H_2I_2$. Gautier (Bull. Soc. Chim., 13, 316), on repeating the experiment, found that the liquid product obtained was chloroform, according to the equation: $2C_2HI_3+3PCl_5=2C_2HCl_3+6I+3PCl_3$. Zeitschr. f. Chem., 1870, No. 13.

Chloroform is decomposed by action of bichromate of potassium and sulphuric acid into phosgene gas (chlorocarbonic acid). Emmerling and Leugel suggest that chloroform when exposed

to light and air is similarly decomposed with the formation of phosgene gas and hydrochloric acid: $C_2HCl_3+2O=2COCl+HCl$. From Berichte d. Deut. Chem. Ges., Nov., 1869.

As a Vehicle for the Internal Administration of Chloroform Dr. Murdock (Medical Record) recommends to add one part of chloroform to two parts of pure glycerin, adding the chloroform very slowly and rubbing up carefully. Then put it in a bottle and let it stand twenty-four hours; a little chloroform will have deposited at the bottom; separate this, and rub it up with the third part of the glycerin. The solution is perfectly clear, is bland to the taste, and has but a slight odor of chloroform; it can be diluted with water to any extent, without disturbing the solution. Six ounces of glycerin with two of chloroform will give seven fluid ounces of the solution, so that each fluid drachm contains about seventeen grains of chloroform. Am. Journ. Pharm., Nov., 1870.

Test for Chloroform.—Prof. A.W. Hofmann has communicated (Berichte der Deutsch. Gesellsch., Berlin, 1870, No. 14), as the best means of distinguishing chloroform from those compounds to which it bears a close resemblance, the application of the action of aniline, or any other primary monamine, whether fatty or aromatic, with alcohol and caustic soda. The characteristic odor of the thereby generated isonitril will give unmistakable evidence of the presence of chloroform. Of course, bromoform and iodoform give the same reaction, also, those compounds which yield by the action of alkalies, chloroform, bromoform, and iodoform. Hofmann has subjected a large number of chloroform analogous bodies to the action of this test, but could find none which yielded isonitril. Since chloræthyliden is introduced for anæsthetic purposes, an agent nearly resembling chloroform both in odor and boiling-point, it is easy by this reaction to distinguish the two, inasmuch as chloræthyliden does not yield isonitril, with an alcoholic solution of caustic soda and aniline. One part of chloroform dissolved in 5000 to 6000 parts of alcohol will furnish a positive reaction. N. Repert. für Pharm., 1870, Bd. xix, Hft. 11.

Iodoform.—J. Henry Carstens (Detroit Rev. of Med.) recommends Wittstein's process for the preparation of this compound. Theoretically, the amount of iodoform which this process yields would be 30 per cent., but only 17 per cent. is usually obtained. The filtrate, which contains besides traces of iodoform, iodide, iodate, formate, and carbonate of potassium, can be utilized by converting the iodate into iodide by evaporating the solution to dryness, heating the residue to a red heat for a short time with one-sixth of its weight of charcoal, and extracting with alcohol. The insoluble residue is carbonate of potassium, while the filtered solution contains iodide of potassium, which may be obtained by evaporation and crystallization. Iodoform appears in the shape of yellow, shining, six-sided scales, having a spicy odor; is volatile at ordinary temperature; almost insoluble in water (1 to 13,000), but more so in alcohol (1 to 80). Alcoholic solutions of potassa decompose it, forming iodide of potassium and formate of potassium. The Pharmacist, Jan., 1871.

Bromoform, Bromal, and Iodal.—Dr. Robertson made some experiments to determine the physiological properties of the above compounds, and found bromoform to closely resemble chloroform in its effects, whilst bromal gave results similar to those produced by chloral. The experiments with iodal were not so satisfactory. Drug. Circ., Nov., 1870.

Solubility of Glue in Glycerin.—Experiments made on this subject by J. M. Maisch, gave the following results:

1. Glue is soluble at the ordinary temperature in a large proportion of glycerin.

2. Glue is permeable by glycerin, slowly at ordinary, more readily at an elevated temperature.

3. Glue swelled in consequence of the absorption of water, remains unchanged in appearance under glycerin, that is to say, even if the glycerin should abstract the water, the former will take the place of the latter liquid, thus preventing the shrinking of the glue.

4. Glue, by continued digestion, dissolves completely in glycerin, gelatinizing on cooling.

5. The solution of glue in glycerin is accelerated by previous

maceration in glycerin, and by increasing the temperature (doubtless also by increasing the pressure).

6. Glue thoroughly permeated by water dissolves in hot glycerin about as readily as it does in hot water.

As practical applications of the above facts, the author suggests the use of a jelly made of glycerin and gelatine, as a desirable vehicle for medicines of an unpleasant taste, the antiseptic properties of the glycerin rendering the jelly unchangeable, whilst its non-drying qualities would retain it soft. Another useful application might be found in making the graduated solution of gelatine for estimating the quantity of tannin in astringent vegetables, &c., with glycerin or dilute glycerin, instead of water as heretofore, the glycerin solution not being prone to changes and consequent unreliability, as is the case with the aqueous solution. Am. Journ. Pharm., Nov., 1870.

Glycerin.—Dr. Köller recommends concentrated glycerin as a substitute for alcohol, for the preservation of zoological and anatomical specimens, being preferable to the latter in not being liable to evaporation, not combustible, and preserving the natural colors of the preparations more perfectly. Drug. Circ., Sept., 1870.

A tabular statement of the quality and reactions of some commercial glycerins is reported by Jos. P. Remington, in Proceedings of American Pharmaceutical Association, 1870, and is also found republished in Am. Journ. Pharm., March, 1871.

Butyric acid is detected in glycerin by adding, as recommended by Perutz, strong alcohol and concentrated sulphuric acid to the suspected article. On heating, the formation of butyric ether will indicate the presence of the impurity. From Dingler's Polytechn. Journ.; Arch. d. Pharm., Juli, 1870.

HEXATOMIC ALCOHOLS AND ETHERS.

Artificial Production of Mannite.—J. M. Hirsh has succeeded in forming artificial mannite, by acting upon glucose prepared from dextrine, and concentrated to 15° Baumé, adding to the solution 5 per cent. of wheat flour, 5 of molasses, and as

much of common malt vinegar at a temperature of 100° F. In twenty-four hours a lively fermentation had set in, which continued for three days. The concentrated liquid possessed the peculiar nauseous taste and odor of manna, and when digested with alcohol, the mannite dissolved, crystallizing upon the evaporation of the alcohol, while dextrine and other impurities remained behind undissolved. This artificial manna is laxative in its action, and does not reduce an alkaline solution of tartrate of copper, showing the complete change of the glucose. From Proc. of Am. Pharm. Assoc.; Am. Journ. Pharm., Feb., 1871.

Saccharine substances, or the bodies which form them, appear to be, according to Commaille (Compt. Rend.), more numerous and their chemical relations more varied than has been hitherto supposed. When, for instance, the juices of the melon in the various periods of development during growth are optically examined, sometimes a right rotating sugar, and at another time, a left sugar is found possessing entirely different properties. The author holds that the question in regard to these carbohydrates is a difficult one, inasmuch as these sugars appear to be in a continued state of change. From Journ. f. pr. Chem., 1869; Arch. d. Pharm., July, 1870.

Glucose.—Professor Charles A. Joy gives an interesting account of the various modes of manufacturing glucose on a large scale, and its uses in the arts. Journ. of Applied Chemistry, June, 1870.

New Method for the Volumetric Estimation of Glucose.—E. Knapp has applied the fact first noticed by Liebig, that an alkaline solution of cyanide of mercury is completely reduced by glucose to metallic mercury. The author has determined that 400 milligrammes of cyanide of mercury, in a boiling alkaline solution, is completely reduced by 100 milligrammes of desiccated glucose. The test solution is prepared from 10 grammes of cyanide of mercury, 100 c.c. of solution of caustic soda, spec. grav. 1.145, and diluted with water to measure one litre. 40 c.c. of the cyanide of mercury solution is brought to boiling in a porcelain dish, and the solution of sugar, containing about $\frac{1}{2}$

per cent. of sugar, allowed to flow into it until all the mercury is reduced. The conclusion of the reaction is known when a drop of the liquid to be tested, placed upon a piece of Swedish filtering-paper, turned over a beaker glass containing a little concentrated sulphide of ammonium, no longer assumes a brown color, indicating undecomposed cyanide of mercury. The advantages claimed for this new method are, that the results are accurate, requiring less time, and that the test liquid is easily prepared and very permanent. Arch. d. Pharm., Nov., 1870.

Products of the Decomposition of Grape Sugar.—H. Reichardt, having studied the action of strong bases upon grape, fruit, and milk sugar, found that by heating these with barytic water to 80° C., or on fusing with baryta, an acid, called by the author saccharic, is generated. When uncombined it presents the appearance of a brown powder, which is very prone to decomposition. It is very soluble in alcohol and water, but insoluble in ether.

Metallic salts give amorphous precipitates, and sesquichloride of iron gives rise to an inky precipitate. Its composition is $C_{14}H_4O_8,3HO$. There is also formed, simultaneously with saccharic acid, the glucinic acid of Peligot, Mulder, and Kawalier, corresponding to the formula $C_{24}H_{16}O_{18}6HO+Aq$. Zeitschr. f. Chemie, 1870, No. 13.

Glucosides. — The artificial formation of populin has been effected by Schiff by heating a mixture composed of salicin and chloride of benzoyle in a sealed tube. On opening the tube muriatic acid gas is evolved, and the dark mass will yield to ether, benzoic acid; and the residue contains, after treatment with water, populin. Annal. der Chem. u. Pharm., cliv, 1.

Amygdalin in the Leaves of the Cherry.—The close relationship between the cherry and cherry laurel, which are only varieties of the same species, would naturally lead to the supposition that amygdalin was contained in the leaves of both. Rochleder found this glucoside in cerasus acida, and infers, from the prussic acid distillate obtained by distilling the leaves with water, that amygdalin is also contained in the cerasus dulcis. Wittst. Vierteljahresschr., Dec., 1870.

New Test Solution for Sugar.—J. Loewe recommends the use of glycerin in place of tartaric acid for the preparation of an alkaline copper solution as a test for sugar. 16 grammes of sulphate of copper are dissolved in 64 parts of water; to this solution is gradually added 80 c.c. of soda solution (spec. grav. 1.34), and then 6 or 8 grammes of glycerin, which redissolves the hydrated oxide of copper. The liquid should not become turbid when diluted with two-thirds of its bulk of water, nor when boiled. It may also be prepared by dissolving 6 grammes of hydrated oxide of copper (made by precipitating a solution of ammonio-sulphate of copper with soda solution, washing the precipitate, and drying over oil of vitriol), in 6 or 8 grammes of glycerin, 50 grammes of water, and 56 grammes of soda solution of the above-mentioned strength. This solution does not become turbid with alcohol, and is preferred by the author. The solutions will not bear considerable dilution without depositing hydrated oxide of copper; but this may be prevented by increasing the proportion of glycerin or soda. Zeitschr. für Anal. Chemie; Amer. Journ. Pharm., Nov., 1870.

Synanthrose is the name of a new amorphous sugar found in the synantheræ. It appears allied to cane sugar, is capable of fermentation, and rotates polarized light to the left. It will reduce a solution of copper, after previous boiling with acids, and forms combinations with oxide of lead, lime, and baryta. There exists, also, in the tubers of the dahlia, associated with synanthrose, a new modification of inulin, named inuloid. From Ann. d. Chem. u. Pharm., 156, 181, 190; Apoth. Zeit., Feb., 1871.

Purification of Sugar and Syrup.—Seyfert (Dingler's Polytechn. Journ.) adds to 100 parts of a concentrated solution of sugar of 28° to 40° B., contained in the vacuum pan, 3 to 15 parts of a solution containing not more than 1 to $1\frac{1}{2}$ per cent. of sulphurous acid. When the syrup is brought to the proper degree of concentration, the sulphurous acid is entirely dissipated, the sugar acquiring an exceedingly pure taste. The process is particularly applicable in removing the unpleasant taste accom-

panying solutions of sugar obtained from sugar beets. Pharm. Zeitung, March, 1871.

Beet Root Sugar.—An interesting account of the manufacture of beet root sugar is published in Druggists' Circ., July, 1870, from Chem. News.

Purification of Dextrine.—According to Dr. Hager, R. Forster has analyzed six samples of commercial dextrine; the highest percentage found was 72.45 per cent., while the lowest was 5.34 per cent., which contained 86.47 per cent. of insoluble matter. It is best purified by dissolving 10 parts of dextrine in a cylindrical vessel in 18 parts of cold distilled water by agitation; after standing, the clear solution is decanted or strained through flannel, and mixed with $1\frac{1}{2}$ to 2 volumes of 95 per cent. alcohol. The liquid is decanted from the doughy precipitate, which is dissolved in a little distilled water, and the solution spread upon glass or porcelain plates to dry in a warm place. From Wittstein's Vierteljahresschr., 1870, 113–115; Amer. Journ. Pharm., July, 1870.

Insoluble Dextrine.—Musculus obtained by heating starch with acetic acid, a dextrine which became soluble when digested with water at 100° C., and appeared, when evaporated, in the form of a yellowish powder resembling ordinary dextrine. If reduced to syrupy consistence only, and set in a cool place, a separation of insoluble dextrine takes place, which on dilution is then completely precipitated. This powder exhibits under the microscope no structural form, is insoluble in cold water, but soluble in water of 50° C., does not precipitate on cooling, and is converted again into the insoluble modification on evaporating its solution to dryness. Its powder is colored with iodine reddish-brown, and its solution a reddish-violet. The same product is also obtained by the action of diastase upon starch, if the action is interrupted when iodine produces a reddish-violet color. The dextrine obtained by boiling starch with dilute sulphuric acid is also insoluble, but differs in some of its properties. Under the microscope it appears composed of small round granules, the size of which is continually on the increase; they

are insoluble in cold water, but soluble in water at 50° C., and do not precipitate on cooling. On evaporating the solution to a syrupy consistence the granules are again formed, and on evaporation to dryness a substance insoluble in cold water is left, bearing a close resemblance to the dextrine obtained by diastase and acetic acid. From Journ. de Pharm. et de Chim., Juni, 1870; Arch. d. Pharm., Nov., 1870.

Soluble Iodide of Starch.—According to M. Petit, an iodide of starch entirely soluble, of nearly constant composition and of fine blue color, is prepared according to the following process:

Take Iodine,	12 grammes.
Ordinary Starch,	100 "
Ether,	q. s.

Dissolve the iodine in a sufficiency of ether, pour the solution on the starch, and triturate until the ether has completely evaporated. Transfer the powder to a porcelain capsule, and expose to a temperature of 212° over the water-bath for half an hour, when it acquires the property of being soluble in hot water. From the soluble iodide of starch thus obtained, the syrup may be obtained as follows:

Iodide of Starch,	25 grammes.
Water (boiling),	345 "
Sugar,	635 "

Each teaspoonful of 20 grm. correspond to 20 milligrm. of iodine. Chem. and Drug., Sept., 1870.

Cellulose.—E. Masing has investigated the cellulose of several fungi, in order to determine its behavior towards chemical reagents. He finds associated with the cellulose a nitrogenous substance, which clings to it with great tenacity, requiring a maceration of three weeks in Schultz's mixture (20 parts of nitric acid, spec. grav. 1.16, and 3 parts of chlorate of potassium) for its complete removal. Pure fungic cellulose resembles the phænogamic cellulose in its behavior towards dilute sulphuric acid, but differs by its difficult solubility in ammoniated copper, by its being but incompletely acted upon by fuming nitric acid, and nitro-sulphuric acid. It differs also from normal cellulose by its behavior with iodureted sulphuric acid and iodureted chlor-

ide of zinc, the former when brought in contact with the fibres of paper or linen color these at once violet-blue, and with the latter blue, while in the case of fungic cellulose no effect is produced. The elementary constitution of this cellulose was found to agree with ordinary cellulose, with the exception of an increase of 1 to 2 per cent. of carbon, and a diminished quantity of hydrogen. Pharm. Zeitschr. f. Russl., July, 1870.

Substitution Products of Cellulose, Starch, Sugar, and Gum Arabic have been obtained by Schuetzenberger, by acting upon these substances with anhydrous acetic acid at a temperature of 150° to 180° C. As with pyroxylin the hydrogen is replaced by an oxide of nitrogen, so is it here replaced by acetyle, acquiring the composition $C_{12}H_7 3(C_4H_3O_2)O_{10}$, three atoms of hydrogen being replaced by three atoms of acetyle. It is obtained by heating cotton for several hours with about six times its weight of acetic anhydride, when it is dissolved into a syrupy liquid. The product is insoluble in water, alcohol, and benzine, but soluble in sulphuric acid. Glycogen, when treated similarly with acetic anhydride, forms also an insoluble compound, $C_{12}H_7 3(C_4H_3O_2)O_{10}$. Gum arabic, when treated with anhydrous acetic acid at 150° C., will swell without solution, two atoms of hydrogen suffering substitution at a higher temperature with an excess of the acid; a body having the composition of $C_{24}H_{15}5(C_4HO_4)O_{20}$ is formed. Arch. d. Pharm., Nov., 1870.

Chemical Constitution of Pyroxylin.—W. F. Gintl, having moistened collodion cotton thoroughly with concentrated sulphuric acid in a closed vessel at ordinary temperatures, the cotton was dissolved into a syrupy liquid, and the space above it filled with a colorless vapor, which was found to consist of nitric acid free from nitrous acid. When the acid solution was saturated with BaO,CO_2, and the precipitated sulphate and carbonate of baryta separated, the filtrate was found to contain the baryta salt of an acid, which possessed all of the properties of Braconnot's sulpho-lignic acid. Pharm. Zeitschr. für Russl., Nov., 1870.

Gun-cotton exploded by Camphor Vapor.—Prof. Charles A. Seeley, having placed some fragments of camphor into a test-

tube, closing its upper end with a plug of collodion cotton and then set in a water-bath, before many minutes the gun-cotton exploded violently. Red vapors were observed to fill the tube before the explosion occurred. Collodion cotton was found soluble in an alcoholic solution of camphor. Journ. Frank. Inst.

Collodium Mercuriale is made, according to the Gior. d. Med. di Torino, from collodion, 30 grm.; terebinth. venet., 150 grm.; hydrarg. bichlor. corros., 0.30 grm. to 0.50 grm. Pharm. Zeitung, 1871, No. 5.

PHARMACOGNOSY.

DRUGS DERIVED FROM THE VEGETABLE KINGDOM.

MYCETES.

Spermoedia Clavus.—Stahl and Höhn have obtained from ergot 0.25 grm. of cholesterin from 3000 grms. of the fresh drug. They extracted it from the fatty oil by gradual crystallization. The cholesterin forms pearly scales, of which a portion is fusible at 141°, while another was fusible at 160° C. Its reaction was neutral, and gave, with sesquichloride of iron and muriatic acid, the characteristic reaction for cholesterin. Arch. d. Pharm., clxxxvii, 36.

Preservation of Ergot.—A. Hirschberg recommends to select unbroken grains only, and after drying them carefully at a moderate heat, to preserve them in small well-sealed vessels. When desirable to keep on hand some bruised and powdered ergot, the same precautions are recommended. The absorption of moisture and contact with the air induce changes, and the slightest odor of propylamia is a certain sign of the commencement of decomposition. Arch. d. Pharmacie, April, 1871; Am. Journ. Pharm., July, 1871.

Organic Matter in Water.—According to Dr. Heisch, water contaminated with sewage, when brought in contact with a solution of sugar, gives rise to the formation of abundant germs in

the shape of small spherical cells, a butyric odor being given off at the same time. Chem. News, June, 1870; Amer. Journ. Pharm., Sept., 1870.

Formation of Fungi in Impure Water.—Frankland, having repeated the experiments of Heinsch and Bischoff on the growth of fungi in impure water associated with sugar, has arrived at the conclusion that sugar itself is insufficient to insure the growth of those organisms, and that the presence of a phosphate of some kind is absolutely required. Pharm. Zeitung, April, 1871.

Boletus Laricis, Bull.—G. Fleury has isolated from the agaric of the larch with anhydrous ether two principles; one a reddish-brown, amorphous substance, soluble in alcohol, wood spirits, chloroform, and acetic acid; insoluble in benzole and bisulphuret of carbon. It is designated as agaric resin, its ultimate constitution of the formula $C_{51}H_{82}O_{10}$. The second, agaricinic acid, crystallizes in microscopic needles, melting at 145.7°, and losing water at a higher temperature. It is soluble freely in alcohol, less in chloroform, still less in ether and acetic acid, and little soluble in benzole and bisulphuret of carbon. In alcoholic solution, when distilled, it volatilizes with the alcoholic vapor. Its soda salt is precipitated by alcohol. Metallic salts give in diluted solutions generally crystalline precipitation. From Journ. Pharm., 10, 202; N. Jahrb. für Pharm., Juli, 1870.

LICHENES.

Parmelia Scruposa (Patellaria Scruposa, Hoffm.).—C. H. Weigelt has isolated from this lichen an acid, which differs from the heretofore described lichenic acid. It exists naturally in a free state, and was obtained by ether, the amount extracted being $2\frac{1}{2}$ to 3 per cent. When pure, patellaric acid presents a felted mass of microscopic snow-white crystals, of an intensely bitter taste, and acid reaction; its elementary analysis gave the formula $C_{34}H_{20}O_{20}$. Patellaric acid is nearly insoluble in water, acetic and muriatic acids, but is readily soluble in methyl, ethyl, and amyl alcohol, ethylic ether and chloroform. Its aqueous solution changes rapidly when exposed to air, assuming a red color. Arch. d. Pharm., Oct., 1870.

LYCOPODIACEÆ.

Lycopodium Clavatum, Linn.—Vinegar from lycopodium. Schaum found that when alcohol is digested with lycopodium, an acid reaction is at once induced, from the generation of acetic acid. Zeitschr. d. Allg. Oest. Apoth. Vereines, May, 1871.

RANUNCULACEÆ.

Cimicifuga Racemosa, Linn.—T. Ellwood Conard has separated from black snakeroot a neutral crystallizable principle, insoluble in water, benzine, turpentine, and bisulphide of carbon, but soluble in alcohol, dilute alcohol, and chloroform; sparingly soluble in ether, fusible at a moderate heat, and completely combustible at a higher temperature. Am. Journ. Pharm., April, 1871.

PAPAVERACEÆ.

Poppy Culture in Pennsylvania.—Geo. W. Kennedy, of Pottsville, details in a communication, an experiment on poppy growing in that state. The plants grew best in well-manured, rather dry soil; the seeds planted in wet soil failed. The yield in opium was small, many of the plants being imperfect. The author detected meconic acid in the opium obtained, and when treated by Mohr's method, with subsequent crystallization from alcohol, it yielded 8.75 per cent. of crystallized morphia. Am. Journ. Pharm., Jan., 1871.

Poppy Culture in China.—Although imperial edicts have been issued in China against the cultivation of this plant, its production seems to be continually on the increase. The part of the celestial empire most favorable to its cultivation is Szechuen, the climate being warm, and two crops can be grown on the same soil annually. Children are employed, and the cost of production thereby cheapened. Chem. and Drug., Aug. 15, 1871.

Opium Wax.—O. Hesse has investigated the waxy substance which is formed on the capsule of the poppy after the petals have fallen, and presents the appearance of a white mealy

covering. The author has resolved this substance into three distinct, crystallizable, fatty bodies, one having the composition of cerotic oxide of ceryl, which was deposited from its chloroformic solution, in the crystalline state at 10° C.; the second, which was next deposited at —10° C., corresponds to the composition $C_{86}H_{86}O_4$, which he regards as a palmitate of oxide of ceryl$=C_{54}H_{55}O+C_{32}H_{31}O_3$. The third substance seems closely related to lactucerin or hyoscerin, melting at 200° C.

Opium.—In a paper by J. W. Hood, chemist, Melbourne, communicated to the British Pharmaceutical Conference, the author gives a comprehensive account of the poppy culture and production of opium in Australia. The results in regard to the quality of the opium have so far not been very satisfactory, as the percentage of morphia has not as yet exceeded $7\frac{1}{10}$ per cent., whereas one specimen examined contained but 2 per cent. of this alkaloid. The other opium alkaloids, particularly narcotina, were, on the contrary, found to be present in abnormal amounts, narcotina being found in the specimen that had yielded but 2 per cent. of morphia, in the remarkable quantity of 8 per cent. The author had instituted practical experiments with various manures and different modes of cultivation, and although the results were not yet very definite and conclusive, they are certainly encouraging, and the author hopes to be able by further observations to arrive at definite conclusions as to the best manure and mode of cultivation of the poppy so as to obtain the greatest and most valuable yield of opium.

J. Jobst, in his report on the opium production in Wurtemberg, states that although large quantities of the seeds were sown, the crop of opium was small in consequence of continued dry weather and heat, as well as the scarcity of labor on account of the war. The quality of the opium, however, was better than that previously grown, samples that were somewhat moist having yielded 12 per cent. of morphia. Amer. Journ. Pharmacy, Nov., 1870.

Morphiometry.—Prof. William Procter, Jr., in a paper on the best practical process for determining the morphia strength of opium, for adoption in the United States Pharmacopœia, states

that on comparing the processes of Staples, Mohr, and one suggested by himself, he arrived at the conclusion that the officinal process for morphia (Staples's) is least complicated than either of the others, will yield a purer product than the Mohr process and a slightly larger yield of morphia, whilst the author's process affords the purest and best crystallized morphia, but proved more complicated than either of the others. Hence Staples's process is to be preferred, modified by exhausting the powdered opium with warm benzine as a preliminary treatment to remove free narcotine, and the caoutchoucoid matter, which tends to resist the solvent action of water. Am. Journ. Pharm., Feb., 1871; from Proceed. of the Am. Pharm. Assoc., 1870.

Dr. Schlosser is convinced, after numerous trials in the course of several years, that the lime method of Mohr as applied by Hager for the estimation of morphia in opium, with the modifications suggested by Jakobson, should be generally preferred. The author furnishes a minute description of the process, which is brought to completion within twenty-four hours. The improvement recommended by Jakobson consists in substituting chloroform instead of ether, for the subsequent removal of the narcotin. Zeitschr. d. Allg. Oest. Apoth. Vereins, Jan., 1871.

CRUCIFERÆ.

Sinapis Nigra, Willd.—A compound of the volatile oil of mustard with bisulphite of potassium has been obtained by Böhler. The two substances, in equivalent proportions, were heated in a retort, when, after two hours' boiling, the oil of mustard had disappeared, and on evaporating the liquid, yellowish glistening crystals were obtained; these, after recrystallization from alcohol, formed colorless crystals possessing a pearly lustre. Annal. der Chemie u. Pharm., cliv, 59.

According to Gréhaut, the fatty oils obtained from the seeds of the cruciferæ, and others having sulphur in their composition, are easily detected by boiling 25 grammes of the oil with an aqueous solution of 2 grammes of caustic potassa in 20 grammes of water. When the mixture is poured on a previously moistened filter, the filtrate will blacken paper soaked in acetate of

lead or nitrate of silver, and on the addition to this of some hydrochloric or sulphuric acid, sulphuretted hydrogen is given off. Drug. Circ., July, 1870.

DIPTERACEÆ.

Dipterix Odorata, Willd.—Constantin Zwenger obtained some time ago, by the action of sodium amalgam in excess upon coumarin (Ann. Chem. u. Pharm. Suppl. Bd., v, 122), melilotate of sodium. From recent experiments of the author, where coumarin was used in excess, the result obtained proved different, a new acid, hydrocoumaric acid, being obtained. This acid presents anhydrous colorless needles, having the composition $C_{36}H_{18}O_{12}$. Hydrocoumaric acid on being heated melts, a portion of the acid subliming in the form of long glistening needles. The melted mass consists now as well as the sublimate, of hydrocoumarin, a body melting at 222° C., and having the composition $C_{36}H_{14}O_8$. Hydrocoumaric acid is bibasic and tetratomic, and most of its salts evolve, on careful heating, hydrocoumarin. Pharm. Zeitschr. f. Russland, July, 1871.

CAMELLIEÆ.

Thea Viridis—Tea Culture in Tennessee.—The tea-plant has been in successful cultivation on a small scale near Knoxville, Tennessee, for ten years, the plants having been originally obtained through the Agricultural Department, Washington. Good judges pronounce the tea not inferior in flavor to the imported "Young Hyson." Nashville Journ. of Med. and Sur., February, 1870.

SAPINDACEÆ.

Paullinia Sorbilis, Guarana, is the name of a product, made by roasting, and moulding into a cylindrical form by the aid of water, the seeds of the Paullinia sorbilis (Mart.), a tree growing abundantly in the province of Amazonas, also, in Guiana and Venezuela, and is used as a nervous stimulant and restorative. Its active principle is an alkaloid, which was first discovered by Theodore von Martius, and called by him Guaranin, and was

afterwards shown by Dr. Stenhouse to be identical with theine and caffeine. It is contained in guarana to the amount of 5.07 per cent., whilst tea contains but 2.13 and coffee 0.80 to 1.00 per cent. M. Fournier, who has also analyzed the guarana, found, besides tannate of caffeine, gum, starch, an acrid green fixed oil, a concrete volatile oil scarcely soluble in water, a peculiar principle not precisely determined, and tannic acid. Pharm. Journ.; Amer. Journ. Pharm., Nov., 1870.

GERANIACEÆ.

Pelargonium Odoratissimum, Willd.—Dr. Oscar Jacobsen found in commercial oil of geranium 8 per cent. of alcohol, and in another sample 20 per cent. of fixed oil. Repeated fractional distillation of the volatile oil yielded a distillate boiling between 232° and 233° C., and of the composition $C_{20}H_{18}O_2$. This geraniol is a colorless liquid of a very agreeable rose odor, soluble in all proportions of alcohol and ether. It yields with recently fused chloride of calcium a crystalline compound, and on fusion with hydrate of potassium, valerianic acid; chromate of potassium and sulphuric acid oxidize it into succinic, acetic, and valerianic acids. From Ann. d. Chem. und Pharm., Feb., 1871; Amer. Journ. Pharm., May, 1871.

RUTACEÆ.

Ruta Graveolens, Linn.—Synthesis of oil of rue. By subjecting to destructive distillation a mixture of acetate of lime and caprinate of lime, Gorrup-Besanez and Grimm obtained an oil which, on examination, proved to be identical with the natural oil of rue, and to have the composition $C_{22}H_{22}O$. The equation explaining its production is as follows: $CaO,C_{20}H_{19}O_3 + CaO,C_4H_3O_3 = 2CaO,CO_2 + C_{22}H_{22}O_2$ or $2CO\left\{\begin{matrix} C_2H_3 \\ C_{18}H_{19}, \end{matrix}\right.$ according to the views of Harbordt, who considers oil of rue to consist of a methyl-nonyl ketone. From Neues. Rep. f. Pharmacie, 1870; London Pharm. Journ., October, 1870.

DIOSMEÆ.

Esenbeckia Febrifuga, Mart.—The bark of a plant found on

the coast range of Brazil, was first chemically examined by Buchner, who announced the existence of an alkaloid—esenbeckina—which he obtained in an impure state. The late researches of Von Karl am Ende have communicated the following constituents: Chlorophyll, two analogous resins, an acid resembling chinovic acid, but differing from the same by its solubility, and from chinovin by its capability of splitting up into a reducible sugar, and a substance similar to coloring matter, sugar, extractive matter, a nitrogenous base—esenbeckina—characterized by its proneness to decomposition when exposed to air, gum, and pectin bodies.

Esenbeckina crystallizes partly in interlaced, trellis-like masses, but grouped generally in three-rayed microscopic crystals, evidently belonging to the rhombic system. When a solution of esenbeckina is mixed with hydrochloric acid and evaporated, beautiful octohedral crystals are deposited. Concentrated sulphuric acid colors the alkaloid dark brown; with sulphuric and nitric acid, a color is produced resembling dried blood; with bichromate of potassium and sulphuric acid, an evanescent violet reaction is obtained. Tannic acid added to a solution of the alkaloid causes a precipitate. The pure alkaloid, and its combination with hydrochloric acid, are highly deliquescent when exposed to air.

The pure alkaloid is obtained by exhausting the bark with alcohol, evaporating to a syrupy consistence, diluting with water, filtering and precipitating with acetate of lead, depriving the solution of the excess of lead, and again evaporating to a syrupy consistence. When diluted with alcohol and water, and ether added in such proportions as to cause the separation of the mixed liquids into two layers, the upper containing the alkaloid, the lower the sugar and extractive matter, the upper ethereal layer was again treated as before, then evaporated, dissolved in water to separate a small quantity of resin, and evaporated with animal charcoal. The charcoal, after repeated washing with warm water until it ceased to be affected by Trommer's test, was then exhausted with alcohol, which acquired a bitter taste, and when evaporated at a gentle heat the residue consists,

aside of a yellowish substance, principally of crystallized esenbeckina. Arch. Pharm., 193 B., 2 Hft.

SIMARUBACEÆ.

Ailanthus Excelsa, Roxb.—Mr. Narayan Daji brings into favorable notice a new article for the Materia Medica, the bark of the Indian ailanthus. The bark resembles in its medical and physiological properties that of the officinal Picræna excelsa, or Jamaica quassia tree, which may be inferred *à priori* from the natural order to which these trees belong. Chemical examination found an uncrystallizable bitter principle, named by the author ailanthic acid, in combination with lime, carbonate of lime, salts of magnesia and alumina, uncrystallizable sugar, gum, a trace of volatile oil, and lignin.

Ailanthic acid is almost inodorous, deliquescent, very soluble in water, much less so in alcohol and ether. Its taste is purely bitter; it reddens litmus paper, and is neutralized by alkalies and strong earths. It decomposes the carbonates of alkalies, of earths, and some of the metals, especially when assisted by heat.

The bark has a pleasant, somewhat aromatic taste, and is prescribed by the native physicians for dyspeptic complaints. Pharm. Journ. and Transact., Aug., 1870.

CELASTRINEÆ.

Catha Edulis, Torksal, the kath of the Arabs, grows wild in Abyssinia and the Nile regions. The leaves of this plant have obtained considerable importance, as possessing stimulating and exhilarating qualities analogous to the coca of the Peruvians. The kath is also used to sustain travellers for days without other refreshments or sustenance. According to Attfield it does not contain caffein, and Flückiger failed to find an alkaloid. Arch. d. Pharm., Jan., 1870.

RHAMNACEÆ.

Rhamnus Infectoria.—W. Stein (Journ. f. Pract. Chem., 1868), having investigated the chemical constitution of the

Avignon or French berry, obtained, besides 2 per cent. of fatty matter, soluble in petroleum naphtha: 1, rhamnin, a coloring substance, soluble in water; 2, rhamnetin, a coloring principle, insoluble in water; 3, rhamno-tannic acid; 4, a nitrogenous fermentable substance; 5, gum. The rhamnin is capable of being split by the action of acids, and also by the fermentable principle into rhamnetin, and a saccharide. Rhamnetin appears isomeric with quercetin. Arch. d. Pharm., April, 1870.

CONIFERÆ.

The Riga Pine.—M. Keller, of Darmstadt, writing in "Cosmos," says, that what is known outside of Russia as the Riga pine (yielding Riga balsam), and which has been praised for its specifically good qualities, is unknown by any distinctive appellation at Riga, and is, in fact, nothing more than ordinary Pinus sylvestris. From Pharm. Jour., July 9, 1870; Amer. Jour. Pharm., Sept., 1870.

Turpentine is deprived of its disagreeable odor by a patented process of Gruner, by distilling the oil of turpentine from tannin. From Polytechn. Notitzblatt; Arch. d. Pharm., Nov., 1870.

Colophonine and Colophonic Hydrate.—Charles R. C. Tichborne read a paper before the Royal Irish Academy on some substances which he obtained by the destructive distillation of commercial rosin. The lighter portion, or "resin spirit" (Harz essenz), obtained by rectification from the product of the distillation, is supposed to consist mainly of hydrocarbons homologous of the series C_nH_{2n}—4 and C_nH_{2n}—6, and an oxygenated oil, which has been named colophonone. On treating old "resin spirit" with water, the author obtained a brown crystalline mass, which gave with sulphuric acid the color reaction hitherto attributed to the oil itself in a most vivid manner, which proved to be owing to a new body,—colophonic hydrate.

Colophonic hydrate is white, perfectly odorless, and has a sweetish taste. It is very soluble in water, alcohol, ether, and chloroform. It crystallizes readily from water or alcohol in

beautiful acicular prisms, which sometimes attain some magnitude. Heated, it melts and sublimes with a partial loss of the elements of water. Its ultimate constitution, $C_{20}H_{22}O_6+2HO$. On dehydrating colophonic hydrate, by heating it in a test-tube, breaking down the sublimated crystals, and returning them to the fused mass as long as moisture was given off, colophonine was obtained as a friable and nearly perfectly white substance. Ultimate analysis pointed to the formula $C_{20}H_{22}O_6$, which makes it isomeric with terpine hydrate, or, more properly, a homologue of terpene, thus furnishing another link in filling up an interesting series. The Chicago Pharmacist.

LEGUMINOSÆ.

Acacia Catechu, Willd.—Catechu is often adulterated. According to Tissandier, genuine catechu, when exhausted by means of ether, loses 53 per cent. of weight, leaving after drying, 47 per cent. of residue.

The mode of preparing the cutch of commerce from the *Acacia Catechu* is described in the Journal of the Agric. and Hortic. Soc. of India, and Amer. Journ. Pharm., Sept., 1870.

Cassia Lanceolata, De Cand.—Active principles of senna. Burgoin and Dr. Bouchut, having investigated the principles of senna leaves, arrived at the conclusion, that senna cannot be admitted into the category of plants which are known to contain but one active principle. Not to any one of the isolated constituents of senna can be attributed the full cathartic effects of the leaves. The leaves, aside from chrysophanic acid, of which it contains but a moiety, seem to contain at least two purgative principles; the one represented by cathartic acid, and the other by the cathartin of Lassaigne and Feneuille. Pharm. Zeitung, Mai, 1871.

Myroxylon Peruiferum—E. Schawhl states that when one gram pure balsam of Peru is triturated in a mortar with five drops of sulphuric acid, cinnamein is converted into resin, and the balsam assumes the consistence of a pilular mass, of a gray-brown color. Adulterations with castor oil or balsam of copaiba

are shown by the soft consistence of the mass. Arch. d. Pharm., June, 1870.

Adulterations of Balsam Copaiva.—Dr. H. Hager found balsam copaiva adulterated with oil of sassafras, and publishes a mode of detecting the adulteration, likewise of oil of turpentine and Venice turpentine, with the mode of quantitative estimation of the last-named adulterant. Amer. Journ. Pharm., Nov., 1870.

To detect the presence of Oil of Turpentine in Balsam Copaiva, Dr. Hager recommends the following simple test: 5 or 6 drops of water, and about one drachm of the balsam, are mixed in a small porcelain dish with as much litharge as will make a thin ointment. This mass at the common summer temperature exhales the characteristic odor of turpentine, even if the balsam is adulterated with only 10 per cent. of the oil. Drug. Circ., Dec., 1870.

Vicia Sativa, Linn.—Occurrence of amygdalin, and a new substance resembling asparagin, in common vetch. During the extraction of legumin from the powdered seeds of vicia sativa, Ritthauser and Kreusler observed on the addition of cold water, the smell of oil of bitter almonds and hydrocyanic acid, from which the presence of amygdaline was observed, inasmuch as no other known substance is capable of yielding hydrocyanic acid under similar circumstances. The attempt to isolate crystallized amygdalin gave negative results, but led to the discovery of a body analogous to asparagin. Zeitschr. d. Allg. Oest. Apoth. Vereines, Jan., 1871.

Indigofera Tinctoria, Linn.—New solvent for indigotin. The pure blue coloring principle of the indigo is characterized by its insolubility in the ordinary solvents. Water, alcohol, ether, the fatty and volatile oils, weak acids and alkalies, do not evince any solvent action upon it. When dissolved by concentrated sulphuric acid it cannot be separated without suffering change, anhydrous acetic acid, to which a drop of sulphuric acid is added, being the only solvent which will take up indigotin without change. Aguiar and Bayer (Annalen d. Chem. u. Pharm.),

have found in anilin a superior solvent, by means of which pure indigotin is obtained from good commercial indigo from the first crystallization. Finely pulverized indigo is boiled with pure anilin in a flask, when the coloring principle is immediately dissolved by the alkaloid, forming a deep, blue solution, from which on cooling, in the course of about two hours, most of the indigotin crystallizes out, the liquid assuming a black color, indicating a complete separation of the coloring principle from the foreign coloring matter by which it is accompanied. Pharm. Centralhalle, June 15, 1871.

Artificial Production of Indigo.—Bäyer and Emmerling found a year ago, that indigo (ingotin) could be obtained from isatin, and the latter from cinnamic acid. Latterly, Emmerling and Engler obtained the same result, through the medium of benzoic acid. When benzoate of lime and acetate of lime combined, are distilled, a combination having the formula of $C_{14}H_5O+C_2H_3O$ is obtained, which may be viewed as an alcohol of benzoic acid, in which the hydrogen of the water is replaced by the radical methyl (C_2H_3). On subjecting this body to the action of strong nitric acid, a nitro product is obtained, having the same composition, with the exception that one atom of hydrogen is replaced by one atom of hyponitrous acid (NO_4), corresponding to the empirical formula $C_{16}H_7NO_6$. As the formula of indigotin is $C_{16}H_5NO_2$, it will be seen that the nitro compound differs from ingotin only by containing two atoms of hydrogen and four atoms of oxygen additional. The transformation into indigotin is finally effected by heating the nitro compound, and subsequent treatment with a mixture of zinc dust and soda lime. Pharm. Centralhalle, April 13, 1871.

Acacia Vera.—To distinguish gum arabic from dextrine, the following reactions have been communicated by Dr. Hager: Gum arabic contains no starch sugar (glucose), while dextrine does, and is easily found by Trommer's sugar test. A solution of the gum is rendered turbid on addition of a solution of oxalic acid, which is owing to the presence of a lime salt contained in the gum arabic, while, on the other hand, a solution of dextrine remains clear. Gum arabic also gives with a neutral salt of

sesquioxide of iron a yellow slimy deposit. From Chem. Techn. Mittheil.; Pharm. Cent., Mai 25, 1871.

Glycyrrhiza Glabra, Linn.—Preparation of glycyrrhizin. J. M. Hirsh (Proc. Amer. Pharm. Assoc., 1870) recommends as the easiest and most practical method of preparing glycyrrhizin from an infusion, made with boiling water and acetic acid: the residue from the evaporation to dryness is dissolved in alcohol, when the acetic acid is neutralized with soda, the new salt crystallizing out, while the glycyrrhizin remains in solution. Another method giving good results was to extract with alcohol by percolation, heating to the boiling-point, and filtering from the deposit produced. The liquid evaporated nearly to dryness, and redissolved in alcohol, left, on evaporation, the glycyrrhizin in an almost pure state. Am. Journ. Pharm., Feb., 1871.

GRANATEÆ.

Bark of Pomegranate Root.—According to Dr. C. Harz, the commercial bark of pomegranate root is, in reality, the bark of the trunk intermixed with some root bark. The latter has larger cells, and at a short distance from the cambium the cells of the medullary rays are not elongated, but quadratic. The trunk bark, like that of the root, possesses anthelmintic properties. Drug. Circ., Aug., 1870.

MYRTACEÆ.

Eucalyptus Globulus.—The leaves of this indigenous tree of Tasmania have been used with varied success in the treatment of intermittent fevers. According to Cloëz, they contain about 6 per cent. of a liquid almost colorless essential oil, its odor resembling that of camphor. It is a mixture of several bodies, which boil at different temperatures. The first eucalyptol boils at 170° C., and has a spec. grav. of 0.905 at 8° C., is easily soluble in alcohol, the dilute solution having a roselike odor. Its elementary composition is $C_{24}H_{20}O_2$. When subjected to the action of anhydrous phosphoric acid, a carbo-hydrogen, $C_{24}H_{18}$, called eucalyptene, is obtained, of spec. grav. 0.836 at 12° C., and boiling at 165° C. Pharm. Zeitsch. für Russl., Nov., 1870.

Cigars made from the leaves of the eucalyptus are used in affections of the larynx, phthisis, and asthma, with encouraging results. The leaves contain about 3 per cent. of a peculiar camphor eucalyptol. They smoke easily, giving off a camphorous odor. N. Repert. f. Pharm., 1871, 4.

CACTACEÆ.

Opuntia Ficus Indica.—The fruit of the opuntia, the cactus fig, resembles the Smyrna fig in form, and possesses, when ripened, an agreeable, refreshing taste. · Their red juicy pulp contains numerous seeds, and the integuments are studded with innumerable fine hairs. The pulp contains, according to Popp, mostly grape sugar; also, cane sugar and a highly tinctorial red coloring matter, which bears a close resemblance to that contained in cochineal. Arch. d. Pharm., Aug., 1870.

UMBELLIFERÆ.

Conium Maculatum, Willd.—Professor V. Schroff experimentally arrives at the following conclusions in relation to the amount of conia contained in the ripe and unripe fruit: 1. The unripe fruit of conium maculatum of the first year's growth contains the least quantity of conia. 2. The unripe fruit, however, in the second year's growth, just previous to ripening, contains the largest proportion of alkaloid. 3. The riper fruits stand in relation to activity, intermediate between the unripe fruits of the first and second year. Arch. d. Pharm., Juni, 1870; from Jahrb. f. Pharm., Bd. xxxiii, Heft 2.

Adulteration of Aniseed.—At the session of the Department on the Progress of Pharmacy at Maatschappy, commercial aniseed was exhibited, containing 5 per cent. of fennel seed, and 3 per cent. of the seed of conium maculatum; another adulterant is specified as a yellow variety of nigella seed. Also, a commercial extract of opium containing only 3 to $3\frac{1}{2}$ per cent. of morphia. Zeitschr. d. Allg. Oest. Apoth. Vereines, April, 1871.

Pulverization of Fennel Seed.—The quantity of oil contained in fennel seed renders the reduction to fine powder extremely

difficult. Coarsely ground seed kept in paper convolutes for six months, is, according to Kalbrunner, easily reduced to a fine powder. Ibid., May, 1871.

Sumbulus Moschatus.—This hitherto unknown plant, yielding musk or sumbul root, is now in bloom in the botanical garden at Moscow. When the Russians occupied Bucharia the plant was discovered, and several roots sent to Moscow, of which but one arrived in good condition. This new umbelliferous plant is hoped to produce fruit, and thus propagate in Europe. From Hager's Ph. Cent., 1870; Am. Jour. Pharm., Feb., 1871.

CAPRIFOLIACEÆ.

Lonicera Xylosteum, Linn.—As the poisonous properties of the seeds of this honeysuckle are not generally known, Dr. Duval, of Geneva, has made known two interesting cases of the poisoning of two children. The symptoms presented were severe vomiting, thready pulse and coma, the pupil of one eye being contracted, while the other was dilated. Recovery followed the exhibition of alcoholic stimulants and coffee. N. Jahrb. d. Pharm., B. 34, 118.

RUBIACEÆ.

Culture of Cinchonas in East India.—The annual report submitted by C. B. Clark, Esq., M.A., Superintendent of Cinchona Cultivation in Bengal, ending 31st March, 1870, furnishes the following highly interesting statements: The three species of cinchona cultivated during the year were the C. succirubra, C. calisaya, and C. officinalis. The increase in number of these species in permanent plantations has been large during the year. The C. succirubra, grown at an elevation of 2500 feet, has been increased by 439,370 plants; the C. calisaya of same elevation by 94,180; and the C. officinalis, at an elevation of 4500 feet, has been increased by 3780 plants. The C. succirubra and C. calisaya grow so freely, that by the third year they can take care of themselves, and little further expense is called for. But the C. officinalis shows no inclination to become a tree at these plantations; it remains a shrub with scanty

foliage, and even on plantations which are five years old there continues the same expense of scouring. It carries less than one-fourth of the bark carried by an acre of C. succirubra, and costs more than four times as much of annual expenditures. The propagation of C. calisaya has been pushed as far as possible. There is no difficulty in multiplying C. succirubra and C. calisaya by cuttings. At Rishap and Java, cuttings of C. calisaya are multiplied with the greatest difficulty and uncertainty, while, on the other hand, in the drier climate of Nilgherries, cuttings strike with the greatest success. It is usually preferred to propagate species by cuttings, to obtain the exact variety, as the seeds, which germinate excellently, often give rise to hybrids, from the crossing of different species of cinchona. The C. succirubra and C. calisaya are planted about 1200 to the acre; C. officinalis about 4000 to the acre. During the year, both C. succirubra and C. officinalis ripened seeds; five and three-fourth ounces of the former, and five and one-fourth ounces of the latter were distributed. One ounce of the seeds will raise nearly 50,000 plants. The most valuable bark known in the European market is the C. calisaya; this species is grown rapidly at Rishap, and, during the year, propagation has been almost entirely confined to it. In growing for profit, it is believed that, ultimately, one or two species only will be grown, and that it is best to discard the species which are clearly inferior to C. calisaya and C. succirubra. Two new kinds of cinchona have been obtained from the Nilgherries; one provisionally, named C. mirabilis, the other C. pitayo. The bark of C. mirabilis contains the astonishing quantity of $13\frac{1}{2}$ per cent. quinine alkaloid, or more than 9 per cent. of crystallizable quinine. C. pitayo is a rich bark from Peru, a high level species, said to be found growing through the snow. The only private cinchona plantation on a large scale, known as the Darjeeling Association, covering 500 acres, is planted with C. succirubra, and has cut and sold a considerable quantity of three-year old bark in the London market. The total number of plants, cuttings, and seedlings of cinchona plants growing on the 31st of March, 1870, on the government plantations near Darjeeling, were as follows: C. succirubra, 1,239,715; C. cali-

saya, 57,032; C. micrantha, 29,667; C. officinalis, and varieties, 930,704; C. pahudiana, 5092. London Pharm. Journ., Aug., 1870.

Hybridization of Cinchonas.—Hybrids of the Cinchona succirubra and C. officinalis are found thriving in the Madras gardens, and of the C. calisaya and C. pahudiana in Java, which is no doubt an important fact, as by hybridization the more delicate but valuable alkaloid species can be crossed with those that are more hardy, but less valuable. Pharm. Journal, Aug. 6, 1870; Amer. Journ. Pharm., Sept., 1870.

White Cinchona Bark from Payta.—O. Hesse found that this bark contains, besides paytin, so large a quantity of starch that the bark might be used as a fermentable and distillable alcohol-producing material. The paytin is a new alkaloid, readily soluble in alcohol, ether, benzine, and chloroform; difficultly soluble in water, in potassa solution, and ammonia; it fuses at 156°, combines with acids, forming salts and double salts. The formula of paytin is $C_{21}H_{24}N_2O$. Chem. News, Aug., 1870; Amer. Journ. Pharm., Sept., 1870.

New Researches on Calisaya Bark from Java.—J. B. C. Moens communicates the results of his researches of ten species of Calisaya dubia and two of Calisaya vera. The freshly-cut bark contains 64 per cent. of water, and when air-dried about 13 per cent. The quantity per cent. of all alkaloids together in the ten first-named species varies from 2.465 to 6.010. The quinia varies in quantity from 0.589 to 2.831 per cent. The cinchonidia (not met with in all the barks), is present in quantities from 0.539 to 2.41; the quantity of cinchonia varies from 1.405 to 3.909 per cent. The barks of Calisaya vera contained respectively 7.442 and 7.482 per cent. of alkaloids; the quinia amounted to 3.670 per cent., and the cinchonia to 2.812 per cent. N. Jahrb. Pharm., 1870.

Some parts of Mexico also seem very suitable for the cultivation of the cinchona. According to a communication of Mr. Hugo Fink, of Cordova, Mexico, this gentleman had planted about one hundred plants of the C. calisaya, C. succirubra, and

C. condaminea, all of which were growing amazingly well, some being already twelve feet high, with leaves ten to fifteen inches long. Amer. Journ. Pharm., Nov., 1870.

Culture of Cinchona Trees upon the Island of St. Helena.—Plantations of cinchonas appear to be constantly on the increase. Having first proved successful in the British and the Dutch Indies, made a good beginning in Algiers and Jamaica, it is now also being tried at St. Helena, and so far with encouraging results.

Culture of Peruvian Bark at Martinique.—Berlanger, Director of the Botanic Garden at Martinique, has arrived at results indicative of the possibility of cinchona culture being a success. Cinchona calisaya, C. lancifolia, C. succirubra, and C. pahudiana have attained a height of from $\frac{1}{2}$ to $3\frac{1}{2}$ metres; chemical analysis furnishes favorable indications. From Pharm. Journ. and Transact.; N. Jahrb. f. Pharm., xxxv, 4.

Ashy Crown Cinchona.—The cinchona cordifolia of Mutis, variety rotundifolia, Weddell, being the tree from which the ashy crown bark of commerce is obtained, was lately rediscovered in the neighborhood of Caraccas, by Dr. Ernst, President of the Society of Natural and Physical Sciences, of Caraccas, a specimen of the same tree having been collected in 1829 in the same place by Dr. Vargas. Senor Vicenle Marcano analyzed a specimen of the bark, and found three decigrammes of quinine, and four decigrammes of cinchonine in sixty grammes of the bark.

From Porto Cabello another bark, known as Quinia Maracaibo, is exported, being the product of the cinchona tucuyensis, a tree found in the forests surrounding the colony of Tovar. Boletin de la Soc. de Cien. Fis. y Nat. de Caraccas; Amer. Journ. Pharm., Sept., 1870.

New process for the assay of Cinchona Barks.—In l'Union Pharmaceutique is found a communication, by M. P. Carles, concerning the assay of cinchona bark. The author, having studied the processes of MM. Maitre, Glenard, Guillermond, and Rabourdin, condemns these several processes on the ground

that they do not enable the operator to obtain the whole of the alkaloid, and particularly the quinine in a state of purity. Carles affirms the following plan to overcome these difficulties:

The bark is reduced to fine powder; 20 grammes of this are mixed in a mortar with 6 grammes of slacked lime, previously rubbed down with 25 grammes of water. This mixture is dried on a water-bath. As soon as it is apparently dry, it is bruised and packed into a glass percolator, closed below by a plug of cotton-wool, and treated with successive quantities of chloroform, of which about 150 grammes should suffice so completely to exhaust the powder, that no residue is left on evaporation of two or three drops. The chloroform is evaporated over a water-bath, and the residue treated several times with dilute acid containing 10 per cent. of sulphuric acid. This solution, passed through a small filter, is heated to boiling, and then treated with enough ammonia to nearly neutralize the acid. The whole of the quinine then crystallizes as sulphate, which may be collected in a filter, washed with a few drops of water, dried, and weighed. The other alkaloids remain in the mother liquid. The process, it is asserted, will furnish the best results, can be executed in a few hours, and is very exact. The Chem. and Drug., Aug., 1870.

Gunning's Method for the estimation of the alkaloid value of Cinchona Barks possesses, as the structure of the bark resists, in a great measure, the extraction of the alkaloids, by means of muriatic acid, some advantages. The bark is first macerated with carbonate of potassium, then gypsum is added, and the whole evaporated. The dried residue is then exhausted with amylic alcohol, from which, on evaporation, the amount of alkaloids is estimated by weighing. The resinous acids pass over in combination with the lime, forming insoluble compounds, and but little of the coloring matter is taken up by the amylic alcohol. Pharm. Centralhalle, Jan. 26, 1871.

Quiniometry.—Dr. E. A. Van der Burg criticizes de Vrij's method of assay of the alkaloids in cinchona bark, as it yields only two-thirds of the alkaloids contained in the bark, that the balance remains mainly in the bark, and also in the alkaline

liquor. He adds further, that we do not possess a method which will even proximately furnish a complete separation of the cinchona alkaloids; that assays giving the composition of cinchona bark to the one-thousandth per cent. are unreliable. From Zeitshr. f. Analyt. Chem., 1870, ii, 179–203; Am. Journ. Pharm., April, 1871.

Another process is that of Fr. Schneider, which has been received in the Austrian Pharmacopœia, and recommended on account of the rapidity and ease with which it is executed. The bark is said to be exhausted with but little loss, and the product almost absolutely pure. 40 grammes of the pulverized bark are mixed with 10 grammes of caustic lime, and reduced with water to a thin magma, the mixture is then thoroughly dried. The alkaloids are set free, while the cinchonic red and kinic acid combine with the lime. The finely pulverized residue is then repeatedly extracted with 90 per cent. alcohol, the mixed liquids filtered, and sulphuric acid added to separate the lime held in solution. It is again filtered, then distilled to regain the alcohol, and the residue heated gently in a dish to volatilize the last portions of alcohol; after cooling, filter to separate resinous matter and precipitate with a solution of caustic soda. The alkaloids are precipitated as a white, curdy, or crystalline precipitate, which is to be washed with the smallest possible quantity of very cold water, and finally weighed after having been dried. Quinia is separated from cinchonia in the usual way by ether, and the alkaloids volumetrically estimated from their solution in sulphuric acid by precipitation with a titrated solution of caustic soda. From Vierteljahresschr. f. Pract. Pharm.; Pharm. Centralhalle, Jan., 1871, No. 2.

New Alkaloid in Cinchona Bark.—D. Howard has obtained from the mother liquors of quinine salts, a yellowish oil, which could not be sufficiently purified for analytical purposes. The formula of its platino-chloride corresponds with the formula assigned by Gerhardt to the anhydrous platino-chloride of quinia. Drug. and Chem., Feb., 1871.

O. Hesse found, in a species of white Peruvian bark, from Payta in Peru, a new alkaloid, which he named Paytin. It is

crystallizable, of the composition, $C_{42}H_{24}N_2O_2.2HO$, and differs in ultimate constitution from cinchonia, in containing two equivalents of carbon in addition. It produced with bichloride of platinum an indigo-blue precipitate, and a purple with terchloride of gold. Arch. d. Pharm., Juni, 1870.

Cephaëlis Ipecacuanha, Richard.—The reports on the cultivation of ipecacuanha in India are not yet very encouraging. The plants are found to grow very slowly, and are difficult of propagation by cuttings. The Indian Medical Gazette, on the authority of Mr. Clarke, now acting for Dr. Anderson, remarks: "It is very possible that, when the plant once gets up, it may not prove slow growing, and that when we once have plants that seed, it may not prove of slow propagation; but it is feared that many days will elapse before any produce is likely to be obtained. London Pharm. Journ., July 2, 1870.

The Inspector-General of Hospitals in East India recommends to his government to introduce the cultivation of the ipecacuanha plant into India in an analogous manner to that of cinchona. It is stated that a living plant had been imported in 1866, and that fifteen plants raised from cuttings of this one are now living. Lond. Pharm. Journ.; Amer. Journ. Pharm., Sept., 1870.

J. Lefort has made parallel estimations of the alkaloid of the officinal root, and an ipecacuanha coming from New Granada or Carthagena belonging, according to Guibourt, to the genus Cephaëlis, but the exact species is unknown. He finds that the officinal ipecacuanha yielded 1.441–1.450 per cent. of tannate of emetia, while the other species yielded but 1.380–1.302 per cent. The Granadian root is thicker than the Brazilian, and when powdered possesses a lighter color. Pharm. Zeitsch. f. Russland.

Coffea Arabica, Linn.—In distilling a cold prepared extract of roasted coffee with lime or magnesia, an alkaline distillate is obtained, which by evaporation, after the addition of hydrochloric acid, and extracting with alcohol, yields a pure chloride of methylammonium. It is formed by the decomposition of caffeine, when combined with tannic acid, as is the case in all coffees, pure caffeine yielding different products of decom-

position, among which is cyanogen. In roasting coffee, part of the caffeine is volatilized together with some methylamia, while the larger amount remains with the coffee itself. The temperature at which these changes are effected is, in case of green coffee (Porto Rico), 275° C.; in the case of yellow coffee (Java), 250–255° C. Druggist's Circ.; New York, June, 1870.

Rubia Tinctorum, Willd.—Rochleder has found in madder-root another principle which stands in close relation to alizarine and purpurine. Its alkaline solution possesses the color of the alkaline combinations of chrysophanic acid. Its boiling solution in acetic acid colors silk and wool a permanent golden yellow. Arch. d. Pharm., July, 1870; from Journ. f. Pract. Chem., 1869.

Artificial Alizarine.—J. W. Young has thoroughly examined and tested the dyeing properties of artificial alizarine prepared from anthracen, and found some of the colors produced with the different mordants much inferior and less durable than those produced by the alizarine prepared from madder. Drug. Circ., July, 1870.

FRAXINEÆ.

Factitious Manna is imported into England resembling cannellated manna. It is of light, uniform color, soluble in four parts of boiling alcohol, which solution, on cooling, appears like clarified honey, while the genuine article assumes the consistence of a solid mass. It contains only 40 per cent. of mannite, while the genuine yields 70 per cent. Arch. d. Pharm., Aug., 1870.

Dr. H. Ludwig examined chemically eight specimens of oriental manna collected in the mountains and the elevated plateaus of Persia, as follows: 1. Oak manna; 2. Ges engebin, or Astragalus manna; 3. Tamarisk manna; 4. Ter engebin, or Alhagi manna; 5. Bidchisht, or willow manna; 6. Shirchisht, or Atraphaxis manna; 7. Shekar tighal, or insect manna; 8. Biblical manna. In all of these sweet exudations, the author failed to find mannite among its constituents, but found them to consist of glucose, inuline, dextrine, starch, trehalose, laevulose,

gum, &c., variously distributed in the different specimens examined. Arch. d. Pharm., July, 1870.

COMPOSITÆ.

Atractylis gummifera.—Lefranc (Comp. Rend.) has separated from the root of this plant the potash salt of a new organic acid. Atractylic acid is colorless, without smell, possessing an acid, astringent, and bitter-sweet taste. When heated to boiling, it is transformed in sulphuric acid, valerianic acid, sugar, and resin. It is tribasic, and its potash salt possesses the formula: $2KO,HO,C_{60}H_{52}O_{20},S_4O_{12}$. Journ. f. Pr. Ch., 1869, Bd. ii, s. 181–182; Arch. der Pharm., July, 1870.

Anthemis Nobilis, Linn.—Sulphured chamomile flowers, to improve their general appearance, are now of frequent occurrence. Wittstein proposed the following test for them: To a concentrated decoction add zinc, acidulate with hydrochloric acid, and distil. The gas which is given off is passed through a solution of acetate of lead, when the formation of a black precipitate of sulphide of lead will indicate that the chamomile flowers in question have been sulphured. Zeitschr. d. Allg. Oest. Apoth. Vereins, Jan., 1871.

Achillea Moschata, Linn.—Dr. A. v. Planta-Reichenau has subjected this plant to chemical analysis and obtained the following constituents: Iva oil, volatile, of a faint yellowish color, agreeable odor, and warm, bitter taste, resembling oil of peppermint. Its composition is $C_{48}H_{40}O_4$. A yellow substance, of the consistence of Venice turpentine, of a yellow color, insoluble in water, soluble in alcohol, to which is communicated a persistent bitter taste; it is named Ivain $= C_{48}H_{42}O_6$. Achilleina, an alkaloid, amorphous, brown-red, very hygroscopic, soluble in water, difficultly soluble in absolute alcohol, insoluble in ether; its odor is peculiar and taste very bitter; its ultimate composition, $C_{40}H_{38}N_2O_{30}$. Moschatina is described as possessing an aromatic bitter taste; composition, $C_{42}H_{27}NO_{14}$. On boiling achilleina with acids, sugar is formed, together with a volatile aromatic principle, a dark-brown matter separating, which was

not bitter, insoluble in water, sparingly soluble in alcohol; composition $=C_{22}H_{17}NO_8$. Annal. d. Chem. u. Pharm., Aug., 1870; Am. Journ. Pharm., Feb., 1871.

SAPOTACEÆ.

Isonandra Gutta, Wight.—The amount of gutta percha annually consumed in Europe and America is estimated at ten millions of pounds. The belt of land which yields it is 500 miles in width, and extends 500 miles north and south of the equator. 43,000 of these trees have been estimated to grow in an area of 8 miles in width by 30 miles in length; each tree will yield an average amount of three tablespoonfuls of juice, and the trees stand in such proximity that one man can easily collect daily the exudation from 80 trees. The duration of yield of each tree is considered about twelve years. Arch. d. Pharm., Aug., 1870.

Pure White Gutta Percha.—A process for preparing this article is published in the Journal of Applied Chemistry, July, 1870, and Amer. Journ. Pharm., Sept., 1870.

APOCYNEÆ.

Strychnos Potatorum, Linn.—Professor J. M. Maisch examined some seeds of a species of strychnos, which had arrived in New York as ballast, under the name of Indian gum nuts, with the view of ascertaining whether, like the seeds of other strychneæ, they contain strychnia. The seeds, when boiled with dilute muriatic acid, gave a decoction which was not precipitated by iodohydrargyrate of potassium, and which, when treated with lime, gave a precipitate that was not an alkaloid. The seeds agree in their botanical characters with those derived from the strychnos potatorum, Linn. fil. Am. Journ. Pharm., June, 1871.

Rabuteau and Peyre (Gaz. Med. de Paris, 1870, No. 34), having studied the toxic effects of mboundon or icaja, the ordeal poison of the Gaboon region of Africa, arrived at the conclusion that the active principle or principles, although resembling in its action strychnia to some degree, it yet differs from it materially, and that it seems to approach nearer to that of brucia. They

regard it as a poison possessing great rapidity of action; it is, however, quickly eliminated, and its fatal effects may be greatly obviated by artificial respiration.

GENTIANEÆ.

Ophelia Chirayta, Griseb.—This plant, whose outward appearance and medicinal properties resemble the Erythræa centaurium and our Sabbatia angularis, is an annual gentiana of the lower Himalaya. Flückiger and Hohn obtained by extracting the herb, and also the stalks and roots, with 60 per cent. alcohol, a peculiar bitter substance (chiretin), and acid (ophelic), soft resin, tannin, sugar, &c. Chiretin, $C_{52}H_{84}O_{30}$, is very bitter, neutral to test papers, and precipitated by tannin. By the action of acids it is separated into ophelic acid, and a yellowish-brown, brittle substance, chiratogenin, $C_{26}H_{24}O_6$. Ophelic acid, $C_{26}H_{20}O_{20}$, was syrupy and deliquescent, yellowish-brown, taste at first sour, and afterwards intensely bitter. Pharm. Journ., Lond., Aug., 1870.

Erythræa Chilensis.—The principle erythrocentaurin, first found by Méhu in European centaury, has also been discovered, according to recent investigations of the author, in the Chilian plant, E. chilensis. Journ. de Pharm., Juni, 1870.

Sabbatia Angularis, Pursh; Erythrocentaurin in American Centaury.—J. F. Hunneker obtained from this plant a non-nitrogenous, crystallizable principle, which he believes from its chemical properties and qualitative reaction, identical with erythrocentaurin. The author found in his proximate research, besides this principle, resin, chlorophyll, fatty matter, gum, albumen, pectin, bitter extractive, trace of volatile oil, an organic acid, &c. Am. Journ. Pharm., May, 1871.

CONVOLVULACEÆ.

Ipomœa Simulans.—A species of ipomœa affording Tampico jalap. Daniel Hanbury has ascertained (Linnæan Society Journal), by growing a fresh tuber of the Tampico jalap, and comparing the vigorous plant with dried specimens from Guana-

juato, that the plant in question belongs to the genus ipomœa, but could not succeed in identifying it with known species. He ascertained that the Paris Museum contained a plant, collected by Galeotti, on the lofty Cordilleras, near Oaxaca, which corresponds precisely with the specimens he had obtained. As it bore a number which is not mentioned in the enumeration by Martens, of Galeotti's Convolvulaceæ (contained in the "Bulletin de l'Academie Royale de Bruxelles"), he therefore concluded that it was unnamed. Under these circumstances, he has drawn up a diagnosis and description of the plant, and proposed to name it Ipomœa simulans. The specific name was chosen in allusion to the remarkable similarity which the plant bears in foliage and habit to the true jalap (Ipomœa purga, Hayne), not to mention the resemblance of its tubers. The funnel-shaped corolla and pendant flower-buds of the Tampico jalap plant are quite unlike the corresponding parts of I. purga, and furnish a ready means of distinguishing the new species, which is less rich in resin, and less purgative than true jalap. Pharmacist, July, 1870.

Ipomœa Simulans.—Prof. H. Spirgatis found in Tampico jalap a resin resembling convolvulin, the resin of true jalap, except its ready solubility in ether. Tampicin, $C_{68}H_{54}O_{28}$, is converted by caustic alkalies into tampicic acid, $C_{68}H_{60}O_{34}$, and by the action of mineral acids into sugar and tampicolic acid, $C_{32}H_{32}O_3$. Tampicin is fusible at 130° C., but begins to decompose at 100° C., assuming a yellow, and finally brown color. The small quantity of resin contained in the tubers, and the large quantity of alcohol requisite for its extraction, will necessarily augment its price. Buchner's N. Repert., 1870, 452–459.

Convolvulus Scammonia, Willd.—A recent importation of resin of scammony, said to have been manufactured in Smyrna from scammony root, has been received in London. It had a resinous fracture, translucent edges, fragrant odor, and was nearly wholly soluble in ether; its pale brown color indicated the probable use of animal charcoal to effect decolorization. Analysis gave in 100 parts 91.4 resin (soluble in ether, and

dried at 212°), insoluble in ether, 2.8; soluble in water, 5.8. London Pharm. Journ., Nov., 1870.

BORAGINEÆ.

Acting upon the statement of Diedulin, that the action of the extract of Cynoglossum officin., L., was analogous to curare, led Prof. Buchheim to determine if other plants of this family possessed a similar effect. For this purpose an extract was made by the successive action of water, alcohol, and absolute alcohol of Anchusa offic., L.; Lycopus arvensis, L.; Symphytum offic., L.; Pulmonaria offic., L.; Lithospermum arvense, L.; Myosotis palustris, L.; Myosotis stricta, L., and Echium vulgare, L. These extracts were dissolved in water, and each gave with tannin, phosphomolybdic acid and phosphotungstic acid, indications of traces of alkaloids. From the Cynoglossum offic. he obtained an impure alkaloid, "cynoglossina," by the method of Stas, as an amorphous, brownish, hygroscopic substance, soluble in water and alcohol, but very sparingly soluble in ether. On frogs, cynoglossina produced paralysis in doses of 0.1 gram., while curare caused a paralytic action with only $\frac{1}{100}$ milligrm. "Echiina," the alkaloid obtained from Echium vulgare, resembles cynoglossina in its chemical and physical characters, but differs from the latter, as it does not produce paralysis, but tetanic convulsions, and a rigidity of the muscles which continues several days. Jahrbuch d. Pharm., Bd. xxxiv, Hft. 3.

SOLANEÆ.

Capsicum Annuum, Willd.—The fruit of this plant contains an alkaloid analogous to conia. The peculiar smell of this alkaloid is recognizable when extract of capsicum is warmed with potash. From Répertoire de Pharmacie; Pharm. Journ. and Transact., Aug., 1870.

Estimation of the Alkaloids of Belladonna and Stramonium.—N. Günther (Journ. de Chem. Méd., 1870, 65) uses the following process: The plants, or parts of the plants, are reduced to a fine powder and digested twice, in ten times their weight of

water, containing 3 per cent. of sulphuric acid, at a temperature of 30° to 40° C. The united liquids are evaporated to a syrup, mixed with three times its volume of alcohol, and allowed to stand twenty-four hours; then filtered, and the alcohol drawn off by distillation. The residue is further evaporated on a water-bath until the last trace of alcohol is volatilized, then shaken with petroleum naphtha to dissolve the resins and coloring matter, pouring off the upper layer. The lower or aqueous layer is neutralized with ammonia, and shaken with chloroform, which takes up the alkaloid. The chloroform layer is next shaken with water, to remove the ammonia salts which have passed over to the chloroform, most of the chloroform regained by distillation, and the rest allowed to evaporate spontaneously. By this method the alkaloid is obtained from the root, the leaves, the ripe and unripe fruit of belladonna, in the crystalline form and nearly colorless, the stalks yielding it in the amorphous state, while from the stramonium the alkaloid is always obtained amorphous. Wittstein Vierteljahresschr., Oct., 1870.

Culture of Medicinal Solaneæ in Canada.—Wm. Saunders exhibited some extracts of hyoscyamus and belladonna, obtained from cultivated plants, which seem to compare favorably with those prepared from the imported herbs. Mr. Saunders has grown a large number of other medicinal plants successfully. Proc. Am. Pharm. Assoc., 1870.

SCROPHULARINEÆ.

Rhinanthus Alectorolophus, Linn.—Professor H. Ludwig has examined some rye bread, of a violet color, in which he found 1.415 parts of rhinanthus seeds, to which the violet color was due. The author also extracted from the seeds a principle, rhinanthin, which crystallizes in stellate prisms, having the composition $C_{58}H_{52}O_{40}$. It possesses a bitterish sweet taste, and is soluble in water and alcohol. When its alcoholic solution is heated with muriatic acid, a green-blue coloration of such intensity is produced as to cause the liquid to appear black. Boiled with dilute muriatic acid it yields a dark-brown flocculent substance, of the composition $C_{34}H_{20}O_8$, and the filtrate contains a fermentable sugar of $C_{12}H_{18}O_{18}$. Arch. der Pharm., June, 1870.

Digitalis Purpurea, Willd.—A complete and interesting review of the chemical history of the constituents of the foxglove up to the present time, has been compiled and published by Ludwig, in the Archiv der Pharmacie, cxciv, 22–70 and 127–159.

LABIATÆ.

Pogostemon Patchouly.—The stearopten of the essential oil of patchouly has been investigated by H. Gal. Analysis gave it the composition of $C_{30}H_{28}O_2$, and it therefore is a homologue of Borneo camphor, $C_{20}H_{18}O_2$. Its crystalline form is hexagonal, melting at 54–55° C., and boiling at 296° C. Its sp. gr. is 1.051, it is soluble in alcohol and ether, but insoluble in water. On distilling over chloride of zinc a liquid passed over at 248–252° C., which was a carbohydrogen of the formula $C_{30}H_{26}$. Liquid oil of patchouly distils at 282° and 294° C.; it has the same composition as its stearopten, and yields, with chloride of zinc, the same carbohydrogen. From Comp. Rend., lxviii, 406; Pharm. Zeitschr. für Russl., Nov., 1870.

CANNABINEÆ.

Cannabis Indica.—Bolas and Francis have subjected cannabin, the impure India hemp resin, to the oxidizing influences of nitric acid, sp. gr. 132, and obtained beside a crystallizable acid, an interesting substance, which they call oxycannabin, composed of $C_{20}H_{12}O_8$. Oxycannabin forms large, flat, colorless prisms, insoluble in water, ether, and bisulphuret of carbon, difficultly soluble in alcohol, soluble in benzole and chloroform. It melts at 175° to 176° C., and sublimes in needles resembling asbestos. Zeitschr. f. Chemie, N. F. vi, 86.

POLYGONEÆ.

Rheum.—Opwyrda notices the continued adulteration of pulverized rhubarb with turmeric, a sophistication which is easily detected on moistening the powder with an alcoholic solution of boracic acid. The adulterated rhubarb will assume a brown color, while the pure will suffer no change. Pharm. Zeitschr. f. Russland, Aug. 15, 1871.

Prof. J. M. Maisch agitates a small quantity of the suspected rhubarb a minute or two with strong alcohol, which is then filtered. Chrysophanic acid being sparingly soluble in this menstruum, the brown-yellow color of the filtrate is due to the resinous principles of rhubarb mainly; if adulterated with turmeric, the tincture will be of a brighter yellow shade. A strong solution of borax produces in both tinctures a deep red-brown color. If now pure muriatic acid be added in excess, the tincture of pure rhubarb will instantly assume a light-yellow color, while the tincture of the adulterated powder will change merely to a lighter shade of brown-red. The test is a very delicate one, and is based on the liberation of boracic acid, which imparts to curcumin a color similar to that produced by alkalies, while all the soluble principles of rhubarb yield pale-yellow solutions in acid liquids. Am. Journ. Pharm., June, 1871.

THYMELACEÆ.

Daphne Mezereum.—Arthur Casselmann has made the unripe fruit of mezereon the subject of a chemical examination. First, the investigation of the fatty oil and the therein contained fatty acids, and second, the examination of the residual marc remaining after the expression of the oil. The oil thus obtained was readily freed from the acrid principle by treatment with alcohol, and was found to be composed of stearin, palmitin, and myristin, 10 per cent.; linolein and common olein, 90 per cent.

The expressed marc yielded to ether 19 per cent. of the fatty oil, and 4.123 per cent. of resin and wax.

Alcohol of 95 per cent. extracted an acrid resin, to which the irritant properties of mezereon were believed to be due, and a neuter principle denominated coccogenin, which differs materially in its chemical relations and reactions from daphnin and the umbelliferon of Sommer. Coccogenin appears, when pure, in the state of a white powder, which, when examined by the microscope, was found to consist of needle-shaped silky crystals. They were soluble in alcohol, insoluble in cold water and in ether, but soluble in hot water. Its elementary composition is expressed by the formula, $C_{20}H_{22}O_8$. Arch. d. Pharm., Sept., 1870.

EUPHORBIACEÆ.

Ricinus Communis.—Popp having made a chemical examination of castor oil seeds grown near Cairo, in Egypt, finds that the unripe seeds, dried at 100° C., contain from 3.5 to 3.8 per cent. of nitrogen. He also believes that the drastic qualities of the seed depend upon a nitrogenous alkaloid, and that the purgative properties of the oil are owing to the presence of minute proportions of the alkaloid. Arch. d. Pharm., Aug., 1870.

Curcas Purgans, Adanson.—R. D. Silva has obtained from this African plant, which bears a close resemblance to the castor oil plant, an alcohol, identical with caprylic alcohol. Journ. f. Pract. Chem., 1869, Bd. 2.

URTICEÆ.

Humulus Lupulus, Willd.—Paper from hop stems is made at a factory near Marseilles, in France. It has an agreeable whiteness; strong and soft. Am. Journ. of Pharm.; from Pharm. Zeitg., 1870.

JUGLANDEÆ.

Juglans Regia, Linn.—T. L. Phipson obtained from the green rind of the common walnut, a crystallizable substance, in the form of elongated octahedrons or needles, but little soluble in water, more soluble in alcohol and benzole, called regianin, which changes in a few hours into a black amorphous acid. Regianic acid forms with alkalies salts, having a magnificent purple color. Also nucitannin, from the episperma by means of water or alcohol; it is a substance analogous to tannic acid, and is decomposed by mineral acids into sugar, acetic acid, and a new acid, soluble in alcohol and ammonia, slightly so in water, forming, with the alkalies, dark-red salts. From Pharm. Centr., No. 46, 1870; Pharm. Zeitsch. f. Russl., Jan. 15, 1871.

BETULACEÆ.

Alnus Glutinosa.—Dr. F. Dreykorn and Prof. E. Reichardt

have examined chemically the wood of the European alder, and separated a variety of tannin, having, when pulverized, a reddish-brown color; soluble in weak alcohol and hot water; sparingly soluble in absolute alcohol; insoluble in ether, benzine, and bisulphuret of carbon, and forming a dirty-green precipitate with neutral sesquichloride of iron. It is also precipitated by tartar emetic and gelatin. Its ultimate constitution is $C_{46}H_{17}O_{11},2HO$. By the action of sulphuric acid it is split, contrary to results obtained by Stenhouse (Pharm. Journ., Dec., 1861), into alder red, $C_{46}H_{19}O_{13}$, and sugar; by fusion with hydrate of potassium, into protocatechuic acid, phloroglycine, and acetic acid, and by dry distillation pyrocatechine is obtained. Arch. d. Pharm., Juni, 1870.

MARANTACEÆ.

Maranta Arundinacea, L.—Brazilian arrowroot.—H. Ludwig examined a sample of arrowroot, grown and manufactured in the provinces of Donna Francisca and St. Catharina. A microscopic examination and comparison with genuine amylum from the Maranta arundinacea, proved that the two feculas were perfectly identical. The Brazilian specimen was unusually pure, and exhibited the arrowroot granules free from impurities. The air-dried amylum lost, when dried at a temperature of 100° to 120° C., 15 per cent. of water, and it proved combustible, leaving an inappreciable residue. Arch. d. Pharm., Nov., 1870.

ZINGIBERACEÆ.

Curcuma Longa, Willd.—T. W. Daube (Leipg. Ap. Zeit., No. 38) has obtained pure crystallized curcumin, an elementary analysis of which gave it the formula $C_{10}H_{10}O_3$. The form of the crystals is apparently that belonging to the orthorhombic system. The curcumin heretofore obtained appears to have been a mixture of pure curcumin with several resins. Pharm. Zeitschr. für Russl., Oct., 1870.

Curcumin.—M. Jwanoff Gajewsky has investigated turmeric, and states that sulphide of carbon takes up from that drug an oil containing, besides oxygen, 80.2 per cent. of carbon and 10

per cent. of hydrogen. This oil boils at from 240°–260° C. The drug having been next treated with ether, yields to that solvent curcumin, as a yellow-colored crystalline body, C_4H_4O, fusing at 172°; the drug contains, moreover, another pigment, and an alkaloid. Amer. Journ. Pharm., Sept., 1870.

IRIDEÆ.

Crocus Sativus, L.—John M. Maisch draws attention to an adulteration of saffron displaying some ingenuity. A recent sample of saffron was found intermixed with some yellow filaments, which proved to be partly the styles, but mainly the stamens with the anthers attached. An orange-red powder was also observed distributed through the saffron, supposed to be the pollen; but when microscopically and chemically examined, it proved to be prepared chalk, colored by saffron, and treated with glucose or honey to improve its pollen-like appearance. The proportion of this adulteration is estimated at about 10 per cent. of the entire weight. Am. Journ. Pharm., Sept., 1870.

Culture of Saffron.—In France saffron is cultivated in Gatinais (Loire), and in the neighborhood of Orange and Carpentier (Vaucluse), only. After a thorough preparation of the soil, containing much sand and lime, the bulbs are planted, and remain in the earth three years. The harvest lasts from fifteen to twenty-five days, and yields on average three flowers to each bulb. Seven to eight thousand flowers will give one pound of fresh saffron, which will lose four-fifths of its weight by drying. One pound of the dried saffron of commerce will, therefore, represent 35,000 to 40,000 flowers. The drying of the saffron is effected by hanging it, distributed on a hair-sieve, over a low coal fire. Am. Journ. of Pharm., July, 1870; from Journ. de Pharm. et de Chimie, Oct., 1869.

SMILACEÆ.

Asparagus Communis.—According to the researches of H. Reinsch, the berries of the asparagus contain a yellowish-red pigment, spargancine, which is soluble in alcohol and ether;

also, a large amount of grape sugar, a peculiar bitter principle, spargine, some resin and coloring matter. Chem. News, May, 1870.

LILIACEÆ.

Pharmimum Tenœ.—Manunu, or New Zealand flax, a new fibre. A number of plants, and a sample bale of the flax have been received by a house in San Francisco. The plant is a bulbous vegetable, provided with long lance-shaped leaves, and resembles somewhat the great Japanese lily. The fibre is not unlike Manilla hemp, but finer and more elastic; the staple is very long, the leaves often reaching a length of four feet, and so strong that a two-twist strand of the size of packthread is more than a man can break. Specimens have been growing and flourishing in Woodward's garden, and the Custom House yard. San Francisco Bulletin.

PALMÆ.

Elais Guiniensis, Jacq.—The fruit of the avoira, or crocra palm tree yields two kinds of oil, viz.: a white-colored, butter-like substance, extracted from the kernel of the fruit, and chiefly used by the natives as food. The other kind is obtained from the fibrous sarcocarpon surrounding the fruit. At the prevailing temperature of its native country this oil is fluid, but in Europe it has the consistency of butter; it is insoluble in cold, as well as boiling water, slightly soluble in alcohol, but very soluble in ether. P. Guyot gives in a tabulated form, the results of the action of reagents upon the oil alluded to, and some of its commercial varieties, as imported from other countries, where the oil is obtained from the same or another kind of palm tree. The action of the reagents is not sufficiently characteristic to be specifically quoted here, the complete solubility in ether being a sufficient test for its purity. From Monit. Sci.; Chem. News, June 24, 1870.

PHARMACOGNOSTIC MISCELLANIES.

THE MEDICAL FLORA OF CALIFORNIA.

A catalogue of the plants which are found in the vicinity of San Francisco, covering an area of a hundred miles north and south, and as far east as Mount Diablo, has been published by H. N. Bolander, the late State Botanist, in the California Medical Gazette, Nos. 17, 18, 19, 20, and 21, 1870. In drawing a comparison between the flora of California and that of the Atlantic coast of our continent, it is a matter of no small astonishment how few are common to both shores. Of the Ranunculaceæ, there are enumerated in the flora of the geological survey of the State of New York sixteen genera, and thirty-nine species. Our catalogue gives eight genera, and twenty-two species. Of the genera, seven, and the species, five, are common to both regions, and in no other family will be found anything like so large a proportion. Of the three California genera of the Berberidaceæ, only one is found in New York, and not one of the species. Of the poppy family, not a genus or species is common. Of the great family of the Cruciferæ, there are in Bolander's catalogue fifteen genera, and thirty-seven species, of which last, only six are common to both states, and of these, four were introduced into America from Europe. Of violets, there are fifteen species enumerated in the New York flora, and eight in our California catalogue, but not one is found in both. Of the Malvaceæ, of eight species found in California, only one is found in New York. The Maruta cotula, and the Achillea millefolium, now spread so profusely over the country, were both introduced into America from Europe, and have found their way to California with the first pioneers. Of trees and shrubs, but few are found common to both shores. Of the walnut family, so numerous and respectable at the East, the Pacific coast has but one solitary representation, the Juglans rupestris. Of the seven species of oak enumerated, not one is found east of the Rocky Mountains. The eight species of willow, and as

many pines, with all the others of the Coniferæ, are peculiar to the Pacific coast. Cal. Med. Gazette.

The indigenous medical botany of California, its anomalous and intensely interesting flora, is attracting inquiry on the part of physicians and pharmacists. At the meeting of the National Medical Convention, held recently in San Francisco, Dr. W. P. Gibbons, of Alameda, presented a paper, entitled "The Medicinal Plants of California." At the request of the author it was referred back to him for completion, with such amendments and additions as may be required. By request, a copy of an abstract of this paper was permitted by the author, for incorporation of the same within the pages of this report. As the author is devoted to the elucidation of his subject, a valuable addition to the materia medica may be anticipated. The paper enumerates 150 genera of plants, 50 of which appear in their pharmacognostic relations, comparatively unknown. The Committee on the Progress of Pharmacy have deemed proper to incorporate an additional number of 34 genera to Dr. Gibbons's list, taken from the catalogue of Prof. Bolander, and duly marked *, giving a total of 184 genera and 344 species. Of the 344 enumerated plants, 261 are peculiarly Californian, leaving only 83 species to represent plants whose habitat is also east of the Rocky Mountains. Of the 184 genera, 153 grow likewise on the Atlantic side, while 31 are found on the Pacific slope only.

RANUNCULACEÆ.

1. Clematis, *L.;* C. lasiantha, *Nutt.;* C. ligusticifolia, *Benth.*
2. Aquilegia, *Tourn.;* A. Californica, *Gray.*
3. Ranunculus, *L.;* R. Californicus, *Benth.;* R. acris, *L.*
4. Delphinium, *Tourn.;* D. Californicum, *Tor.* and *Gr.;* D. nudicaule, *Tor.* and *Gr.*
5. Actæa, *L.;* A. rubra, *L.*, var. arguta.

BERBERIDACEÆ.

6. Berberis, *L.;* B. aquifolia, *Pursh.*

NYMPHÆACEÆ.

*7. Nuphar, *Smith;* N. advena, *Ait.*

PAPAVERACEÆ.

8. Eschscholtzia, *Cham.;* E. Californica, *Cham.*
9. Dendromecon, *Benth.;* D. rigidum, *Benth.*

FUMARIACEÆ.

*10. Dicentra, *Bork.;* D. formosa, *D. C.*

CRUCIFERÆ.

11. Nasturtium, *R. Br.;* N. officinale, *R. Br.;* N. curvisiliqua, *Nutt.*
12. Barbarea, *R. Br.;* B. vulgaris.
13. Turritis, *Dill.;* T. perfoliata, *Lam.* (glabra, *L.*).
14. Arabis, *L.;* A. blepharophylla, *Hook.* and *Arn.*
15. Cardamine, *L.;* C. angulata, *Hook.*
16. Sisymbrium, *L.;* S. officinale, *Scop.;* S. deflexum, *Harvey.*
17. Erysimum, *L.;* E. asperum, *D. C.*
18. Brassica, *Tourn.;* B. alba, *L.* (naturalized?); B. nigra, *L.* (naturalized?).
19. Lepidium, *R. Br.;* L. Menziesii, *D. C.;* L. Californicum, *Nutt.*
20. Capsella, *Veut.;* C. bursa pastoris, *Moench.*
21. Thysanocarpus, *Hook.;* T. elegans, *Fisch.* and *Mey.;* T. radians, *Benth.;* T. oblongifolius, *Nutt.*
22. Raphanus, *L.;* R. raphanistrum, *L.*

VIOLACEÆ.

23. Viola, *L.;* V. pedunculata, *Torr.* and *Gray.*

HYPERICACEÆ.

24. Hypericum, *L.;* H. anagalloides, *Cham. Schl.;* H. Scouleri, *Hook.*

CARYOPHYLLACEÆ.

25. Silene, *L.;* S. Gallica, *L.*
*26. Stellaria, *L.;* S. media, *L.*

PORTULACACEÆ.

27. Claytonia, *L.;* C. perfoliata, *Don.*

MALVACEÆ.

28. Malva, *L.;* M. rotundifolia, *L.*
29. Sidalcea, *Gray;* S. malvæflora, *Gray.*
30. Lavatera, *L.;* L. assurgentiflora, *Kellogg.*

LINACEÆ.

31. Linum, *L.;* L. congestum, *Gray;* L. spergulinum, *Gray.*

GERANIACEÆ.

32. Geranium, *L.;* G. Carolinianum, *L.*
33. Erodium, *L'Her;* E. cicutarium.

OXALIDACEÆ.

34. Oxalis, *L.;* O. stricta, *L.;* O. Oregana, *Nutt.;* O. corniculata, *L.*

RUTACEÆ.

*35. Ptelea, *L.;* P. trifoliata, *L.*

ANACARDIACEÆ.

36. Rhus, *L.;* R. diversiloba, *Torr.* and *Gray.*

VITACEÆ.

*37. Vitis, *Tourn.;* V. Californica, *Benth.*

RHAMNACEÆ.

38. Frangula, *Tourn.;* F. Californica, *Gray.*
39. Ceanothus, *L.;* C. divaricatus, *Nutt.;* C. thyrsiflorus, *Esch.;* C. integerrimus, *Hook.*

SAPINDACEÆ.

40. Æsculus, *L.;* A. Californica, *Nutt.*

FICOIDEÆ.

41. Mesembryanthemum, *D. C.;* M. dimidiatum, *Harv.*

POLYGALACEÆ.

42. Polygala, *Tourn.;* P. Nutkana, *Moc.* and *Sessi.*

LEGUMINOSÆ.

*43. Melilotus, *Juss.;* M. parviflora, *Desf.*
44. Psoralea, *L.;* P. physodes, *Dougl.*
45. Astragalus, *L.;* A. (twelve species).

46. Cercis, *L.;* C. occidentalis, *Torr.*

47. Pickeringia, *Nutt.;* P. montana, *Nutt.*

ROSACEÆ.

48. Cerasus, *L.;* C. ilicifolia, *Nutt.;* C. Virginiana, *L.;* C. biglandulosa.

49. Spiræa, *L.;* S. opulifolia, *L.;* S. ariæfolia, *Smith.*

50. Horkelia, *Cham.* and *Schl.;* H. cuneata, *Lindl.;* H. tenuiloba, *Gray;* H. fusca, *Lindl.*

51. Chamœbatea; C. folioloba.

52. Potentilla, *L.;* P. anserina, *L.;* P. rivalis, *Nutt.;* P. glandulosa, *Lindl.*

53. Rubus, *Tourn.;* R. Nutkanus, *Mocino.;* R. macropetalus, *Dougl.;* R. spectabilis, *Pursh,* and six other species.

54. Amelanchier, *Medic.;* A. Canadensis, var. alnifolia.

55. Photinia, *Lindl.;* Ph. arbutifolia, *Lindl.*

GROSSULACEÆ.

56. Ribes, *L.;* six varieties.

SAXIFRAGACEÆ.

57. Saxifraga, *L.;* S. peltata, *Benth.*

58. Heuchera, *L.;* H. micrantha, *Dougl.;* H. pilosissima, *Fisch.* and *Mey.*

LYTHRACEÆ.

59. Lythrum, *L.;* L. Californicum, *Torr.* and *Gray.*

ONAGRACEÆ.

*60. Epilobium, *L.;* E. angustifolium, *L.*

61. Oenothera, *L.;* O. biennis, *L.;* O. primuloides.

CUCURBITACEÆ.

62. Megarrhiza, *Torr.* and *Gray.* (Echinocystis); M. Oregana, *Torr.* and *Gray.*

UMBELLIFERÆ.

*63. Eryngium, *L.;* E. petiolatum, *Hook.*

64. Sanicula, *S.;* S. Menziesii, and six other species.

65. Deweya, *Torr.* and *Gray;* D. arguta, *Torr.* and *Gray;* D. Hartwegi, *Gray;* D. Kelloggii, *Gray.*

66. Cicuta, *L.;* C. Californica, *Gray.*

67. Sium, *L.;* S. latifolium, *L.*

68. Carum, *L.;* C. Kelloggii, *Gray.*

*69. Pimpinella, *L.;* P. apiodora, *Gray.*

70. Osmorrhiza, *Raf.;* O. occidentalis, *Nutt.;* O. nuda, *Torr.*

71. Angelica, *L.;* A. cymopteris, *Nutt.*

*72. Levisticum, *L.;* L. apiifolium, *Nutt.*

73. Peucedanum, *L.;* P. leiocarpum, *Nutt.*, with five other species.

74. Conium, *L.;* C. maculatum, *Willd.*

75. Heracleum, *L.;* H. lanatum, *D. C.*

76. Daucus, *Tourn.;* D. pusillus, *Michx.*

ARALIACEÆ.

77. Aralia, *Tourn.;* A. racemosa, *L.*

CORNACEÆ.

78. Cornus, *Tourn.;* C. Canadensis, *L.;* C. Nuttallii, *Aud.;* C. pubescens, *Nutt.;* C. sericea, *L.*

CAPRIFOLIACEÆ.

79. Lonicera, *L.;* L. involucrata; L. Californica, *Torr.* and *Gray.*

80. Sambucus, *Tourn.;* S. pubens, *Michx.;* S. glauca, *Nutt.*

RUBIACEÆ.

81. Galium, *L.;* G. aparine, *L.;* G. Californicum, *Hook.;* G. Andrewsii, *Gray.*

82. Cephalanthus, *L.;* C. occidentalis, *L.*

COMPOSITÆ.

83. Aster, *L.;* A. Durandi, *Nutt.;* A. laxifolius, *Torr.* and *Gray.*

84. Erigeron, *L.;* E. Canadense, *L.*, and three other species.

85. Solidago, *L.;* S. speciformis, *Gray;* S. Californica, *Nutt.;* S. elongata, *Nutt.;* S. occidentalis, *Nutt.*

86. Grindelia, *Willd.;* G. hirsutula, *Hook.;* G. robusta, *Nutt.*

87. WYETHIA, *Nutt.;* W. helenioides, *Nutt.;* W. angustifolia, *Nutt.;* W. glabra, *Gray.*

88. BALSAMORHIZA, *Hook.;* B. macrophylla, *Nutt.*

89. BAHIA, *Lag.;* B. artemisiæfolia, *Lep.;* B. confertiflora, *D.C.;* B. arachnoidea, *Fisch.* and *Mey.*

90. HELENIUM, *L.;* H. puberulum, *D. C.;* H. Bolanderi, *Gray.*

91. ACHILLEA, *L.;* A. millefolium, *L.*

92. COTULA, *Gaert;* C. coronopifolia, *L.*

93. MATRICARIA, *L.;* M. discoidea, *D. C.*

*94. MARUTA, *Cass.;* M. Cotula, *D. C.*

95. TANACETUM, *L.;* T. Huronense, *Nutt.*

96. ARTEMISIA, *L.;* A. vulgaris, *L.;* A. filifolia, *Torr.;* A. Californica, *Less.;* with five other species.

97. GNAPHALIUM, *L.;* G. Sprengelii, G. Californicum, and three other species.

98. SENECIO, *L.;* S. vulgaris, *L.;* S. Douglasii; S. Bolanderi, and two other species.

99. ARNICA, *L.;* A..parviflora, *Gray;* A. cordifolia, *Hook.*

*100. CENTAUREA, *L.;* C. Melitensis, *L.;* C. solstitialis, *L.;*

101. MALACOTHRIX, *D. C.;* M. Californica, *D. C.*, and three other species.

102. MACRORHYNCHUS, *Less.;* M. grandiflorus, *Torr.* and *Gray;* and four other species.

ERICACEÆ.

*103. VACCINIUM, *L.;* V. ovatum, *Pursh;* V. parvifolium, *Smith.*

104. ARBUTUS, *Tourn.;* A. Menziesii, *Pursh.*

105. ARCTOSTAPHYLOS, *Adams;* A. tomentosa, *Dougl.;* A. glauca, *Lindl.;* A. pungens, *H. B.* and *K.;* A. nummularia, *Gray.*

106. GAULTHERIA, *Kalm.;* G. Shallon, *Pursh.*

107. RHODODENDRON, *L.;* R. Californicum, *Gray.*

108. LEDUM, *L.;* L. glandulosum, *Nutt.*

109. PYROLA, *Tourn.;* P. rotundifolia, *L.*

110. CHIMAPHILA, *Pursh;* C. umbellata, *Nutt.*

PLUMBAGINACEÆ.

111. Armeria, *Willd.;* A. vulgaris, *Willd.*

112. Statice, *Tourn.;* S. Limonium, *L.*

PRIMULACEÆ.

113. Glaux, *L.;* G. maritima, *L.*

114. Anagallis, *Tourn.;* A. arvensis, *L.*

SCROPHULARIACEÆ.

115. Scrophularia, *Tourn.;* S. nodosa, *L.*

116. Mimulus, *L.;* M. luteus, *L.;* M. cardinalis, *Dougl.;* M. moschatus, *Dougl.;* M. inconspicuus, *Gray.*

117. Veronica, *L.;* V. Americana, *Schw.*

VERBENACEÆ.

118. Verbena, *L.;* V. prostrata, *R. Br.;* V. hastata, *L.*

LABIATÆ.

119. Mentha, *L.;* M. Canadensis, *L.*

*120. Lycopus, *L.;* L. Europæus, *L.*

121. Salvia, *L.;* S. carduacea, *Benth.;* S. columbaria, *Benth.*

122. Pogogyne, *Benth.;* P. Douglasii, *Benth.;* P. serpylloides, *Gray.*

123. Scutellaria, *L.;* S. tuberosa, *Benth.;* S. Bolanderi, *Benth.*

124. Audibertia, *Benth.;* A. grandiflora, *Benth.;* A. Stachyoides, *Benth.*

125. Marrubium, *L.;* M. vulgare, *L.*

126. Stachys, *L.;* S. ajugoides, *Benth.;* S. Chamissonis, *Benth.;* S. Nuttallii, *Shuttlew.*

127. Micromeria, *Benth.;* M. Douglasii, *Benth.*

BORRAGINACEÆ.

128. Cynoglossum, *Tourn.;* C. grande, *Dougl.*

129. Heliotropium, *Tourn.;* H. Curassavicum, *L.*

HYDROPHYLLACEÆ.

130. Eriodyction, *Benth.;* E. glutinosum, *Benth.*

POLEMONIACEÆ.

*131. Polemonium, *Tourn.;* P. cœruleum, *L.*

GENTIANACEÆ.

132. Erythræa, *Pers.;* E. Muhlenbergii, *Griesb.*

*133. Menyanthes, *L.;* M. trifoliata, *L.*

CONVOLVULACEÆ.

134. Calystegia, *R. Br.;* C. soldanella, *R. Br.;* C. sepium, *R. Br.*

135. Convolvulus, *L.;* C. Californicus, *Choisy.*

136. Ipomœa, *L.;* I. sagittata, *Desf.*

SOLANACEÆ.

137. Solanum, *Tourn.;* S. umbelliferum, *Esch.;* S. nigrum.

138. Nicotiana, *L.;* N. quadrivalvis, *Pursh.*

APOCYNACEÆ.

139. Apocynum, *Tourn.;* A. androsæmifolium, *L.;* A. cannabinum, *L.;* var. hypericifolium.

ASCLEPIADACEÆ.

140. Asclepias, *L.;* A. fascicularis, *Dew.;* A. eriocarpa, *Benth.*

OLEACEÆ.

141. Fraxinus, *Tourn.;* F. Oregana, *Nutt.*

ARISTOLOCHIACEÆ.

142. Aristolochia, *Tourn.;* A. Californica, *Gray.*

143. Asarum, *Tourn.;* A. Hookeri, *Field.*

CHENOPODIACEÆ.

144. Chenopodium, *L.;* C. anthelminticum, *L.*

145. Salicornia, *Tourn.;* S. herbacea, *L.*

POLYGONACEÆ.

146. Rumex, *L.;* R. maritimus, *L.;* R. salicifolius, *Weinm.;* R. acetosella, *R. Br.*

LAURACEÆ.

147. Oreodaphne, *Nees;* O. Californica, *Nees.*

THYMELACEÆ.

148. Dirca, *L.;* D. palustris, *L.*

SAURURACEÆ.

149. Aneminopsis, *Hook.;* A. Californica, *Nutt.*

EUPHORBIACEÆ.

150. Euphorbia, *L.;* E. leptocera, *Engelm.;* E. crenulata, *Eng.;* E. lathyris, *L.*

URTICACEÆ.

151. Urtica, *Tourn.;* U. urens, *L.;* U. gracilis, *Ait.*

GARRYACEÆ.

152. Garrya, *Dougl.;* G. elliptica; G. Fremonti, *Gray;* G. buxifolia, *Gray.*

JUGLANDACEÆ.

153. Juglans, *L.;* J. rupestris, *Engelm.*

CUPULIFERÆ.

154. Quercus, *L.;* Q. lobata, *Nee.;* Q. agrifolia, *Nee.;* Q. sonomensis, *Benth.;* Q. chrysolepis.

155. Corylus, *Tourn.;* C. rostrata, *Ait.*

MYRICACEÆ.

156. Myrica, *L.;* M. Californica, *Cham.* and *Schl.*

BETULACEÆ.

157. Alnus, *Tourn.;* A. viridis, *D. C.;* A. Oregana.

SALICACEÆ.

158. Salix, *Tourn.;* S. brachystachys, *Benth.*, and seven other species.

159. Populus, *Tourn.;* P. monilifera, *Ait.;* P. angustifolia.

CONIFERÆ.

160. Pinus, *Tourn.;* P. insignis, *Dougl.;* P. tuberculata, *Dougl.;* P. Sabiniana, *Dougl.;* P. Lambertiana, *Dougl.*

*161. Picea, *L.;* P. grandis, *Dougl.*

*162. Abies, *L.;* A. Mertensiana, *Bong.;* A. Douglasii, *Lindl.;* A. Menziesii, *Dougl.*

*163. Thuja, *Tourn.;* Th. gigantea, *Nutt.*

*164. Torreya, *Arnott;* T. Californica, *Torr.*

ARACEÆ.

*165. Symplocarpus, *Sabisb.;* S. Kamtschaticus, *Bong.*

ALISMACEÆ.

*166. Alisma, *L.;* A. Plantago, *L.;* A. Californica, *Torr.*

ORCHIDACEÆ.

*167. Cypripedium. *L.;* C. Californicum, *Gray.*

IRIDACEÆ.

*168. Iris, *L.;* I. longipetala, *Herb.;* I. macrosiphon, *Torr.* and *Gray;* I. Douglasiana, *Herb.*

LILIACEÆ.

169. Trillium, *L.;* T. sessile, *L.;* T. ovatum, *Pursh.*

170. Veratrum, *Tourn.;* V. fimbriatum, *Gray;* V. Californicum, *Durand.*

171. Anticlea, *Kth.;* A. Fremonti, *Torr.*

172. Lilium, *L.;* L. Canadense, *L.;* L. Washingtonianum, *Kellogg.*

*173. Erythronium, *L.;* E. grandiflorum, *Pursh.*

*174. Smilacina, *Desf.;* S. racemosa, *Desf.;* S. stellata, *Desf.;* S. bifolia, *Ker.*

175. Camassia, *Lindl.;* C. esculenta, *Lindl.*

176. Chlorogalum, *Lindl.;* Ch. pomeridianum, *Kunth.*

177. Allium, *L.;* A. acuminatum, *Hook.*, and four other species.

GRAMINEÆ.

*178. Lolium, *L.;* L. perenne, *L.;* L. tremulentum, *L.*

*179. Triticum, *L.;* T. repens, *L.*

FILICES.

*180. Polypodium, *L.;* P. Californicum, *Kaulf.;* P. Scouleri, *Hook.*

181. Adiantum, *L.;* A. pedatum, *L.;* A. Chilense, *Kaulf.*

*182. Nephrodium, *Rich.;* N. rigidum, *Desv.;* N. Filix-mas. *Rich.*

183. Aspidium, *Sw.;* A. munitum, *Kaulf.;* A. Californicum, *Eat.*

MUSCI.

*184. POLYTRICHUM, *Dill.;* P. juniperinum, *Hedw.*

Cundurango.—The wood and bark of a tree known as cundurango, growing in Ecuador, and used in that province with reputed success in cancer, fungus hæmatodes, and constitutional syphilis, has been analyzed by Dr. Thomas Antisell. No crystalline alkaloid or active principle was separated by the usual methods of proximate analysis, and the medicinal virtues of the plant are supposed to reside either in the yellow resin it contains, or in the extractive, the former being soluble in alcohol, and the latter in water. The therapeutic position of the plant seems to be that of an aromatic bitter. A description of the physical appearance of the drug is given by the author. Am. Journ. Pharm., July, 1871.

Carnauba Wax.—A new variety obtained from the leaves of the Carnau palm, Copernicus cerifera. Its color is yellow, with a greenish tinge, less fusible than beeswax, spec. grav. 0.999, fusing-point 84° C., and contains 0.14 per cent. of ash. Alcohol dissolves 31.5 per cent of melissin, fusible at 86° C. From Journ. f. Pract. Chemie, 1869; Arch. d. Pharm., April, 1870.

Unona Odoratissima.—The essential oil called ylang-ylang, or ihlang-ihlang, is obtained by distilling the flowers of a large tree, which grows in the Philippine Islands, the Straits of Malacca, and Indian Archipelago. The flowers are flosculent and drooping, and of a greenish-yellow color. They yield an oil having an exquisite odor, somewhat partaking of the jasmine and lilac. It is made principally at Manilla and Singapore, and is now largely used by perfumers. Lond. Pharm. Journ., Jan., 1871.

Cyclopia Vogelii—Cyclopic acid.—Arthur H. Church, while endeavoring to extract theine from the dried leaves and flowers of this plant, which is used by the African Boers for tea, found a substance possessing an intense greenish-yellow fluorescence. This cyclopic acid is crystallizable, and its formula $C_{14}H_8O_8$. Chem. News, July 1, 1870.

Indigenous Drugs.—C. Lewis Diehl furnishes a report on the kinds of indigenous drugs collected in several sections of the southern and western states, the proper methods for gathering, curing, and packing for the market, with other items of interest connected with the subject. Proceedings Am. Pharm. Assoc., 1870.

Chlorophyll.—Its proximate constitution having been investigated by E. Schwabe, who verified the views previously advanced by Fremy, that chlorophyll is composed of two distinct coloring principles; and of Ludwig and Kromayer (Arch. d. Pharm., Mai, 1861), who succeeded in separating a yellow and a nitrogenous blue coloring matter. Schwabe, after a due investigation of the subject, arrived at the conclusion:

1. Chlorophyll is the product of the union of cyanophyll and xanthophyll.

2. The formation of these two coloring principles is effected in the same cell.

3. When these pigments develop unequally in the leaf, they may occur in a separate state, and, therefore,

4. The reddening of the autumn leaves is caused by the excessive development of cyanophyll, and its subsequent transformation into the red pigment by the action of organic acids. Arch. d. Pharm., Mai, 1870.

Chemical Substitution in Phyto-Chemistry.—Dr. Rudolph Strohdecker, in a paper, after giving an historical sketch of previous investigations, on phyto-chemical substitution, shows that during the growth of plants in soil of varying composition, they are subject thereby to a substitution of their isomorphous constituents. In the cellular membrane of plants, the cellulose compound of lime, $C_{12}H_{10}O_{10}CaO$, the CaO is frequently replaced by its isomorphenes MgO,MnO,FeO,ZnO (Mulder). In the seeds, PO_5 is replaced by AsO_5, and these acids, which commonly exist in combination with the base CaO and MgO, may be replaced by FeO and MnO. As a matter of interest in a physiological point of view, it appears that these chemical substitutions, as effected in the organism of plants, exert a decided influence upon their morphosis during growth. Plants of sim-

ilar species, growing in differently constituted soils, seem to deviate more or less in their form. The teeth of the serrated leaf of the hieracium boreale will exhibit different angles on calcareous soil, than when found growing on soil containing non-calcareous magnesian sandstone, and that these leaf-tooth angles stand in causal relation with the angles of CaO,CO_2 and MgO,CO_2. Archiv d. Pharm., Feb., 1871.

Trinkerit is the name of a new fossil resin found in Carpano, Istria. According to analysis of Dr. Hlasiwetz, it has the following composition: Carbon, 81.1; hydrogen, 11.2; sulphur, 4.7; oxygen, 3.0 = 100.00. The resin is completely combustible. It possesses a hyacinth red, to a chestnut brown color, is quite transparent, insoluble in water, sparingly soluble in alcohol and ether, but completely soluble in boiling benzole. When pulverized or warmed, an agreeable aromatic odor is evolved, and on fusion, sulphuretted hydrogen is given off. Zeitschr. d. Allg. Oesterr. Apoth. Vereins.

Resins.—Dr. Sacc's investigation of the nature and properties of resins seems of considerable value. It embraces damarr, copal, amber, rosin, shellac, elemi, sandarac, and mastic, all of which are pulverizable. He finds rosin, shellac, sandarac easily soluble in alcohol; elemi and carnauba wax with difficulty; copal cakes; while damarr and amber are insoluble.

Ether dissolves damarr, rosin, elemi, sandarac, and mastic easily, carnauba wax with difficulty; copal only swells; amber and shellac are insoluble.

Acetic acid swells rosin, it appears, without action on all of the other resins.

Caustic soda dissolves shellac readily; rosin with difficulty, and is without action upon amber and all the other resins.

Bisulphide of carbon has no action upon amber and shellac; copal swells; elemi, sandarac, mastic, and carnauba wax are dissolved with difficulty; damarr, rosin, and mastic with ease.

Benzine does not dissolve copal, amber, or shellac; elemi and sandarac only with difficulty; carnauba wax much better; demarr, rosin, and mastic quite easily.

Concentrated sulphuric acid has no action upon carnauba wax,

but dissolves all of the resins, their solutions assuming a more or less dark-brown color, with the exception of demarr, which exhibits a bright-red color.

Nitric acid communicates to carnauba wax a straw yellow color, to elemi a dirty yellow, to mastic and sandarac a light brown, and is quite without action on all of the other resins.

Ammonia exerts no action upon amber, demarr, shellac, elemi, and carnauba wax; copal, sandarac, and mastic swell in ammonia, with ultimate solution; rosin is easily soluble. From Zeitschr. d. Allg. Oest. Apoth. Vereines.

DRUGS DERIVED FROM THE ANIMAL KINGDOM.

Adulteration of Beeswax.—Hager (Pharm. Centralh., x) has pointed out the specific gravity test for determining qualitatively the adulteration of beeswax with Japanese wax. According to Roussin, it is possible, by the combined use of Japanese wax, which will raise the specific gravity, and of tallow, which will lower it, to make a mixture which will have the specific gravity of pure wax. The author recommends the saponification of the suspected wax with boiling potash lye, the solution of which will contain the saponified Japan wax, from which, on saturation with muriatic acid, palmitic acid is separated. When wax is pure saponification is not effected, and no fatty acid is separated on saturation with hydrochloric acid. Journ. d. Pharm. et de Chimie, Mai, 1870.

Dr. Hager has met with a substance sold in the continental market as beeswax, which is in reality a mixture of beeswax, paraffin, and Japan wax. A method for the detection of this fraudulent sophistication is found in Pharm. Centralhalle, 1867, No. 7.

Adulteration of Beeswax.—E. Davies examined a number of specimens of beeswax, and found some of them largely adulterated with paraffin. To determine the percentage of paraffin present he destroys the wax with fuming sulphuric acid. Fifty grammes of the wax, and one and a half ounce by measure of fuming sulphuric acid are put into a small beaker, holding about five ounces, and gradually heated in a water-bath, care being

taken to stir it slightly at first, as the action is apt to become immanageable. When the violence of the action is over the heat is raised to 100° C. for about an hour and a half, stirring the mixture occasionally, then set aside to cool, and when quite cold the paraffin, which is found forming a layer on the black, semi-liquid mass, is carefully removed, washed with water, and again heated with one-half ounce of the acid in a smaller beaker. This gives the paraffin perfectly white, which is then washed, dried, and weighed.

The admixture of rosin may be estimated by triturating with cold alcohol, which dissolves out the rosin. Lond. Pharm. Journ., Sept., 1870; Amer. Journ. Pharm., Nov., 1870.

Niinfat of Yucatan.—Dr. A. Schott (Report of the Commissioner of Agriculture, Washington, 1869) describes an insect called Niin, a hemiptera, related to the genus coccus, which feeds on the spondias, a plant belonging to the Anacardiaceæ, and a fat obtained therefrom, which is used principally in the drug stores of Yucatan for the preparation of ointments and plasters, and is highly esteemed as an external remedy.

The fat is obtained by boiling the insect in water, when, on cooling, the fat which rises to the surface may be skimmed off. In its essential properties niinfat resembles mutton tallow. It is fusible at 50° C., soluble in ether, turpentine, benzole, chloroform, and boiling alcohol. Its sp. gr. at 15° C. is 0.92. It yields by saponification a volatile acid possessing a peculiarly pungent odor, named by Blöde niinic acid, the chemical composition of which differs but little from hircinic and capronic acid. Olein, stearin, and palmitin, are embraced among the constituents of the fat. Arch. d. Pharm., Feb., 1871.

Honey.—Hengel clarifies pale honey by dissolving it in an equal part of water, adding some carbonate of magnesia, and after thorough shaking, filtering. The filtrate is then evaporated on a water-bath to the proper consistence. He has also found that the cause of honey darkening by boiling was owing to the decomposition of coloring matter, which he succeeded in removing by means of recently precipitated hydrate of alumina. Pharm. Zeitschr. f. Russl., Nov., 1870.

Tinted Honey, of great beauty and delicacy, has been produced. The comb is virgin, the wax almost white, the honey limpid, pure, and of the color of pale-red currant jelly. The secret of its production is not revealed, except that it is the result of artificial feeding. From Pharm. Journ., Lond., Dec., 1870.

Statistical information on the honey trade in the United States has been furnished by B. F. Stacy. The amount of honey produced for the year 1868 has been estimated to exceed 30,000,000 pounds, which, at an average of 22½ cents per pound, would give upwards of $6,750,000. Proceedings Am. Pharm. Assoc., 1870.

Coccus cacti.—Baudrimont (Journ. de Pharm. et de Chimie, Feb., 1870), in examining adulterated cochineal, confirms the statement of Himmelmann (Der Apotheker, ix, 48), of having found sulphate of baryta used for that purpose. The author concludes that the so-called black cochineal of commerce is swollen by exposure to vaporized water, and rolled in precipitated sulphate of baryta, which he ascertained to augment the weight of the insect 20 per cent. Good cochineal contains usually 4 to 6 per cent. of moisture, while that manipulated by steam he found to contain 11 per cent. Arch. d. Pharm., Juni, 1870.

Testing Cochineal.—J. M. Merrick, Jr., in Amer. Chem., April, 1871, gives a new method for ascertaining the comparative coloring powers of different samples of cochineal. He employs permanganate of potassium, which is preferable to the bleaching with chloride of lime, as this oxidizing substance does not precipitate the coloring matter of the cochineal. Am. Journ. Pharm., June, 1871.

Inefficiency of Young Cantharides.—According to J. Nentwich, the young immature cantharis insects do not possess the blistering property; it is only the adult flies, capable of the act of reproduction, which contain cantharidin. Zeitschr. f. Chemie; Drug. Circ., April, 1871.

Culture and Diseases of the Silkworm.—Pasteur has studied the diseases which attack the silkworm, particularly the disease

pébrine, on account of the black specks which occur on the silkworm suffering from it, and which consists in the development of peculiar parasitic corpuscles which invade the eggs, the blood, and all the tissues of the silkworm. As the specks are easily detected on the moth of the silkworm, Pasteur advises the cultivator to examine it, and make sure that healthy moths are started. From Pharm. Journ., July, 1870; Amer. Journ. Pharm., Sept., 1870.

IV. PHARMACEUTICAL LEGISLATION, SOCIETIES, PRIZE QUERIES, ETC.

New York.—A bill for licensing druggists, apothecaries, and their assistants, has passed the Legislature of New York, which authorizes the mayor to appoint an examining committee, consisting of one apothecary, one druggist, and two physicians. The law as it stands is very unsatisfactory and unreasonable in its provisions, and meets therefore with merited opposition from apothecaries, who are convinced that, aside from all disregard of collegiate evidences of proficiency, it was merely inaugurated for the benefit of politicians. An Apothecaries' Union has been formed, consisting of educated pharmacists only, whose ultimate object is to replace the obnoxious law by one less objectionable.

California.—The Pharmaceutical Society proposes a bill for the examination and registration of apothecaries, to be drawn conjointly with a committee of the California Medical Society.

Illinois.—At a meeting of the druggists of Chicago, held in February, 1871, a proposed law was drafted and published in the Pharmacist, of March, 1871, entitled: An Act to regulate the practice of pharmacy and the sale of poisons in the State of Illinois.

New Jersey.—The New Jersey Pharmaceutical Association, at the meeting held on the 16th of August, reconsidered the draft of a law proposed by them for enactment in New Jersey,

and referred it to a committee, with the direction that they endeavor to obtain its passage at the next session of the Legislature.

South America.—The Sociedad de Farmacia, of the Republic of Chili, is at present busy in the elaboration of a Chilinese Pharmacopœia, which is intended to come up to the present requirements of science, and the wants of pharmacists. The practice of pharmacy of this state is under a well-regulated supervision.

Great Britain.—The Pharmaceutical Society of Great Britain, instead of making, as required by the Pharmacy Act of 1868, regulations on the keeping and dispensing of poisons compulsatory, made them only recommendatory, on account of violent opposition to the proposed measures, by resolutions adopted on the part of the Society at their annual meeting, held on May 17th. Latterly, a bill was introduced into Parliament, entitled An Act to amend the Pharmacy Act of 1868, in which all power to frame such regulations is taken from the Society and placed in the hands of the council of the Society, and ultimately the Privy Council. All regulations approved or framed by the Privy Council in pursuance of the amended section, will have the same effect as regulations prescribed in manner specified in the principal act.

Australia.—For the purpose of regulating the evils arising from an irregular practice of pharmacy, a law has been drafted by the Pharmaceutical Society of Victoria, by which apothecaries, by examination, are only allowed to dispense. The drafted law is to be submitted to the Governor, and through him to the Parliament.

Germany.—Propositions having been introduced into the Council of the North German Apothecaries for the unification of the practice of pharmacy throughout the German Empire, and the introduction of one common German Pharmacopœia, they were enthusiastically received, and will, doubtless, obtain the support of both sections of the country. Committees have been appointed by the Apothecaries' Associations of the different German states for that purpose. The annual meeting of the

South German Branch of the Apothecaries' Society will be held at Worms, September 6th and 8th, where the unification of the North and South German Apothecaries' Societies will be discussed.

The new German Pharmacopœia is expected to appear in January, 1872.

Austria.—The free practice of pharmacy throughout the empire is now being agitated in Austria. The government is memorialized pro and con; but as the General Pharmaceutical Society is strenuously opposed to all measures tending to liberate the practice of pharmacy in that country, no change in this direction may be looked for at present.

The annual meeting of the Society was held in the city of Linz, on September 17th, 18th, and 19th.

Holland.—The Pharmaceutical Society of the Netherlands held its twenty-third annual meeting on the 27th of June. The subjects for consideration were the introduction of the Java cinchona bark, so highly recommended by Möns, into the Pharmacopœia, which is at present under revision, and the legalization of the use of measures of capacity with decimal divisions. The new edition of the Pharmacopœia is ready in manuscript form for acceptance. The introduction of gramme weight has been postponed to the 31st of December.

Belgium.—The Pharmaceutical Society of Belgium proposes to the Ministerial Department the following reformatory measures for academical instruction: uniform preliminary attainments for students of medicine and pharmacy, and attendance upon a philosophical course; enlargement of the sphere of the pharmaceutical branches by the addition of hygiene; a more thorough instruction in quantitative analysis; a course of toxicology; restoration of the doctorate of pharmacy, &c.

Spain.—Reports from the Director of the Collegio de Farmaceuticos, Madrid, give evidence of the flourishing condition of that institution. The government has been memorialized, requesting the candidature of pharmaceutists for the filling of the chairs in natural history, physics, and chemistry of public insti-

tutions. The establishment of pharmaceutical colleges is also petitioned.

PORTUGAL.—The Portuguese Pharmaceutical Society has addressed a memorial to the king, petitioning for a law establishing visitations of pharmacies, the examiners to be non-residents of the district.

ITALY.—The Collegia Farmaceutico Italiano, of which Colleoni, of Venice, is President, was instituted, at Verona, on March 27th, 1871. The college was inaugurated under the auspices of the six Pharmaceutical Societies of Italy.

A plan for the Sanitary Codex of Italy is now printed and distributed among the members of Parliament, in which freedom of location is proclaimed to all apothecaries in possession of a diploma.

PRIZE QUERIES FOR 1871.

Among the prize queries of the Academy of Medicine in Madrid, for the year 1871, is one to demonstrate by practical experiments which variety of poppy is best adapted to culture in Spain, the yield of opium, and the percentage of morphia contained therein. From Pharm. Zeitung, 1870, No. 22; Am. Journ. Pharm., July, 1870.

The Philosophical Faculty of the University of Göttingen has published the following prize query of the Beneke fund for the year 1870: The exact determination of atomic weight of the metals of the earths, together with proofs on the limits of errors in the results obtained; also a critical analysis of scientific material bearing on that point; the faculty desires, also, a treatise on the query, whether the hypotheses of Prout and Dumas ought to be rejected; or, whether the differences between these hypotheses and the observations may be explained by sufficient chemical or physical reasons. The essays must be written in the German, Latin, French, or English language, and handed in by August 31, 1872. First prize, 500 thalers, gold; second prize, 200 thalers, gold. Ibid.

The Petroleum Industrial Society of Halle has offered two

prizes of 5000 thalers ($3500) each: 1, for the discovery of a chemical compound to purify crude paraffin press cakes with little loss (not over 5 per cent.); and, 2, for the discovery of apparatus, &c., for cooling quantities of paraffin, at every season, to at least 5° C. (21° F.) Ibid.

Prize query for 1870 *and* 1871, *issued by the Hagen-Buchholtz'schen Stiftung:* The action of acids upon salts, and salts upon salts, indicating reciprocal decomposition, as evidenced by the production of phenomena of color, in cases where no insoluble compound is formed. A complete grouping of these reactions is desired, founded upon experimental research, together with, as far as this may be possible to accomplish, a quantitative estimation, relative and stoechiometric. Essays to be sent in up to August 1st, 1871. Pharm. Centralhalle, Jan. 26, 1871.

Prize query issued by the Apotheker Verein, for pupils of Pharmacy, for 1870 *and* 1871: Description and chemical examination of the various gum benzoins found in commerce, including a quantitative estimation of benzoic and cinnamic acid. Answers to be sent in as above. Ibid.

Prizes for Pharmacognostic and Chemical Subjects.—Dr. Flückiger and Dr. Ludwig offer prizes of 350 thalers for the best two essays on the subject of organic chemistry, which will tend to advance materially pharmacognostic knowledge. Among the first class subjects mentioned for consideration are: researches on the alkaloids of ergot; on lobelina, ricinin, crotonin, smilacin; further to investigate the origin of the essential oils and resins of the umbelliferæ; also, an explanation of the genetic connection of the alkaloids of opium, and those of the cinchonas. The essays, accompanied with the preparations, to be presented before the 1st of July, 1871. Arch. d. Pharm., April, 1870.

The Society for the Advancement of Industry, of Prussia, has offered the following prizes:

1. The analysis of aniline blacks as obtained by different processes, the silver medal, and 50 thalers.

2. A method to render the arsenical residues in the manufacture of aniline innocuous, the gold medal, and 2000 thalers.

3. The best treatise on the decomposition of chloride of potassium by means of organic substances, 2000 thalers.

4. An essay on the history, manufacture, and uses of glycerin, and tests for its purity, 150 to 200 thalers.

5. A treatise on the preparation of manganate of potassium, and its application, 100 to 150 thalers. Leipzig Illust. Zeitung, Nov., 1869; Arch. d. Pharm., Juni, 1870.

Prize Query of the Faculty of the University of Munich.— Based on the probability that the albuminous bodies of the animal organism, the so-called protein compounds, should be regarded merely as modifications of the albuminous compounds generated in the vegetable organism, the Faculty of the University of Munich desires a compilation of the methods of preparation, and the properties of animal and vegetable protein compounds (albumen, casein, fibrin), critical siftings, and an extension of our present knowledge based upon new researches. Essays to be handed in on or before April 30th, 1871. Buchner's N. Rep., No. 8, 1870; Am. Journ. Pharm., Nov., 1870.

The Medical Faculty of Dorpat, Russia, presented the following for the prize query, for 1872: Comparative investigations of the saponins, which are to be isolated from the Saponaria rubra and S. Ægyptiaca, and also of the Quillaya saponaria.

V. NECROLOGY.

PHYSICISTS AND PHILOSOPHERS.

Dr. Blasius, Professor of Natural Philosophy of the Collegium Carolinum, Braunschweig, died August 3d, 1870.

Heinrich Gustav Magnus, of the University of Berlin, a prominent German Naturalist, and Professor of Natural Philosophy and Technology, died on the 4th of April, 1871, aged 68 years.

Antoine Cæsar Becquerel, the celebrated electrician, died in Normandy in the 84th year of his age.

Dr. Karl August von Steinheil, born 1801, at Rappoltsweiler, in Alsace, died at Munich, 14th September, 1870.

CHEMISTS.

Professor Alexander Bolley, of Zürich, died August 3d, 1870, in his 58th year.

Dr. Augustus Matthiessen, Professor of Chemistry of the St. Bartholomew Hospital, London, died October 6th, 1870.

Professor William Allen Miller, of King's College, London, died at Liverpool, on the 30th of September, 1870, aged 52 years.

Niepce de St. Victor, the great photographist, died in Paris, April 7th, 1870.

Dr. Geo. A. C. Staedeler, Professor of Analytical Chemistry in the Swiss Polytechnicum, died in Hanover, January 11th, 1871.

Prof. F. J. Otto, died at Braunschweig, January 30th, 1870.

Prof. Palmstedt died at Stockholm, April 6th, 1870.

Dr. Sheridan Muspratt, died at Liverpool, February 4th, 1870.

Charles Gustavus Bischof, died at Bonn, November 30th, 1870.

Dr. Weltzien, died at Karlsruhe, November 14th, 1870.

Dr. Wilhelm Wicke, of Göttingen, Professor of Agricultural Chemistry, died there June 6th, 1871.

PHARMACEUTISTS.

Prof. D. Mitscherlich, the well-known pharmacologist, died in Berlin, March 18th, 1871.

Jean Joseph Edouard Hauchamps, Professor of Pharmacology at the University of Brussels, died in March, 1871.

Prof. Martin S. Ehrmann died in Vienna, June 19th, 1870.

M. Leroux, Pharmacien, of Vitry le Français, the discoverer of salicin, died May 22d, 1870, aged 65 years.

Benjamin Brogden Orridge, one of the founders of the Pharmaceutical Society of Great Britain, died at London, July 17th, 1870, aged 57 years.

Robert John Fowler, formerly of Leeds, England, died at Paris, on December 8th, 1870.

William McConnell, a prominent member of the Canadian Pharmaceutical Society, died on the 28th of September, 1870.

Arthur Rapalje, Vittoria, Ontario, died August 23d, 1870.

Dr. Henkel, Professor of Pharmacy at the University of Tübingen, died March 2d, 1871, in the 42d year of his age.

T. W. Gissing, Wakefield, England, died on the 28th of December, 1870, aged 41 years.

Samuel D. Hendel, St. Louis, Mo., died January 23d, 1871.

Eugene L. Massot, St. Louis, Mo., died February 14th, 1871.

Ferris Bringhurst died on the 16th of March, 1871, in the 34th year of his age.

William Neergaard, Jr., died at New York, April 27th, 1870.

Joseph Locuson, Oakland, California, died July, 1870.

Charles Notson, formerly of Philadelphia, died at St. Joseph, Mo., April 17th, 1870, aged 31 years.

Samuel Lenher, Philadelphia, died the 20th of July, 1870, aged 46 years.

John D. Owen, a promising pharmaceutist, died in Kentucky.

BOTANISTS.

F. A. Miguel, the eminent Professor of Botany at the University of Utrecht, and Director of the Botanic Gardens at Leyden, has died, 1871.

Dr. S. Lantzius-Beninga, Professor of Botany at the University of Göttingen, died at Göttingen, March 6th, 1871, aged 55 years.

VI. PHARMACEUTICAL LITERATURE.

PHARMACOGNOSY.

Lehrbuch der Pharmacognosie und Pharmacologie, &c., von Schwarzkopf. Leipzig u. Heidelberg: 1871. Winter.

Die Pflanzenstoffe in chemischer, physiologischer, pharmacologischer u. toxicologischer Hinsicht bei A. Husemann u. Th. Husemann. Berlin: 1870. Springer.

Materialen zu einer Monographie des Inulins. Von G. Dragendorff. St. Petersburg: 1870.

Allgemeine Waarenkunde, von Henkel. Eine systematische Zusammenstellung der wichtigsten im Handel erscheinenden Natur- und Kunstproducte. Erlangen: 1870. Enke.

Waaren-Lexicon für Droguisten, Apotheker und Kaufleute, eine specielle Characteristik der gangbaren Droguen, Colonialwaaren, Chemikalien und Farbwaaren, nebst Anleitung zur Prüfung derselben und Bestimmung ihrer Güte. Von Henkel. 2 Aufl. Berlin: 1871.

Cinchona speciebus quibusdam, adiectis iis, quæ in Java coluntur. Commendatio ex annalibus musei botanici Lugduno-batavi excripta. F. A. G. Miguel. Amsteldami: 1869.

Notes sur les Quinquinas, par Weddell. Paris: 1870. Chez Victor Masson et fils.

Uebersicht der bis jetzt bekannten Arten von Theobroma von G. Bernoulli. Separat-Abdruck aus den Denkschriften der allgemeinen schweizerischen naturforschenden Gesellschaft. Bd. xxiv. Zürich: 1869.

Essay on the Cultivation of Cinchona at Martinique, by Balanger, Director of the Botanic Gardens. Paris: 1870.

Copy of all Correspondence between the Secretary of State for India and the Governor-General, and the Governors of Madras and Bombay, relating to the cultivation of Cinchona Plants from April, 1866, to April, 1870. London: 1870.

Analyses de Materia Medica Brasileira dos productos, que forao primiados nas exposiçoes nationæs e na exposi universal de Parisi om 1867. Peckolt, Rio de Janeiro: 1869.

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Lehrbuch der gesammten Pharmacie u. ihrer Hülfswissenschaften, für Aerzte u. Apotheker. Dr. A. Cassel-

mann, St. Petersburg, u. C. Frederking, Riga. Riga, A. Kymmel.

Die Elemente der Pharmacie von Dr. G. Yäger, Dr. W. Stædel, und Dr. J. B. Henkel. Breslau: 1870. Bei Günther.

Lehrbuch der praktischen u. theoretischen Pharmacie, mit besonderer Rücksicht auf angehende Apotheker u. Aerzte, von Dr. Marquart. 2 Aufl., bearb. von Dr. H. Ludwig u. Dr. E. Hallier. Jena.

The Elements of Pharmacy: Materia Medica, Botany, Chemistry, Pharmacy, Prescriptions, and Practical Manipulations. By F. Harwood Lesher. London: 1870. Churchill & Sons.

Taschenbuch der Geheimmittellehre; eine kritische Uebersicht aller bis jetzt untersuchten Geheimmittel für Aerzte u. Apotheker, von C. G. Wittstein. 3 Aufl. Nördlingen: 1871.

ANNUAL REPORTS.

Jahresbericht über die Fortschritte der Pharmacognosie, Pharmacie und Toxicologie, von Wiggers u. Husemann. N. F. 5 Jahrg., 1870. Göttingen: Vandenhoeck und Ruprecht.

Annuaire de therapeutique, de matière médicale, de pharmacie et de toxicologie pour 1870, contenant le résumé des travaux thérapeutiques et toxicologiques publies en 1869 et les formules des médicaments nouveaux. Suivi d'un memoire sur la goutte; par A. Bouchardat. Paris: Germer Baillière.

The Year-Book of Pharmacy, containing the proceedings at the yearly meeting of the British Pharmaceutical Conference, and a report on the progress of Pharmacy, which includes notices of all pharmaceutical papers, new processes, preparations and formulæ published throughout the world. London: 1870. Churchill & Sons.

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Manuel de Chimie médicale et pharmaceutique. Par Riche. Paris: 1870. Chez. Germer-Baillière.

A Companion to the British Pharmacopœia. By Squire. 7th edition. London: 1870. Churchill.

A Supplement to the Pharmacopœia. A concise but comprehensive Dispensatory and Manual of Facts and Formulæ for the use of Practitioners in Medicine and Pharmacy. By Th. Redwood. 3d edition. London: 1870. Churchill.

Formulaire pharmaceutique des hôpitaux militaires, rédigé par le Conseil de Santé des armies et approuvé par le Ministre de la guerre. Paris: 1870.

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Including opinions on the proposed system, by chemical and pharmaceutical authorities; with additional remarks by the author. Reprinted from the Pharmaceutical Journal. London.

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Dictostelium mucroides. Ein neuer Organismus aus der Verwandtschaft der Myxomyceten, von Dr. O. Brefeld. Frankfurt am Main.

Lehrbuch der gesammten Pflanzenkunde. 5. Auflage, von Dr. Moritz Seubert, Leipzig u. Heidelberg.

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First book of Indian Botany, with numerous illustrations, by Oliver. London: 1870.

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Das Inulin. Ein Beitrag zur Pflanzenphysiologie. Prantl. Eine von der Philosophischen Facultät zu München gekrönte Preisschrift. München, 1870.

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Lehrbuch der chemischen Technologie; zum Unterricht u. Selbststudium. F. Knapp, Braunschweig.

Die Lehren der modernen Chemie. Populäre Darstellung zum Gebrauche für Anfänger im Studium der Chemie. Von Koller, Würzburg.

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Explosive Nitrilverbindungen insbesonders Dynamit u. Schiessbaumwolle u. deren Eigenschaften u. Anwendung in der Sprengtechnik. Isidor Franzl, 2. Aufl., Wien.

Ueber einen eigenthümlichen Molecular-Zustand des Zinnes. J. Fritsche, St. Petersburg.

First Principles of Chemical Philosophy. Josiah P. Cooke, Jr. London and Cambridge: 1870.

Lectures for Chemical Students. Edward Frankland. London: 1870.

A Manual of Elementary Chemistry, theoretical and practical, by George Fownes, F.R.S., late Professor of Practical Chemistry in University College, London. Edited by Robert Bridges, M.D., Philadelphia, 1871. Henry C. Lea.

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Die Schule der Chemie, oder erster Unterricht in der Chemie, &c. J. A. Stöckhardt, Braunschweig.

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Chemistry—General, Medical, and Pharmaceutical, including the Chemistry of the U. S. Pharmacopœia. By John Attfield, Ph.D., F.C.S., &c. From the second enlarged English edition. Revised by the author. Philadelphia: Henry C. Lea, 1871.

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Die gerichtlich-chemische Ermittelung von Giften in Nahrungsmitteln, Luftgemischen, Speiseresten, Körpertheilen, &c. Von Dr. Georg Dragendorff. ord. Prof. der Pharmacie an der Universität Dorpat. St. Petersburg: 1868.

A Cyclopædia of Quantitative Chemical Analysis. By Frank H. Storer, A.M., Prof. of General and Analytical Chemistry in the Massachusetts Institute of Technology. Part I. Sever, Francis & Co., Boston and Cambridge, 1870.

Micro-Chemistry of Poisons, including their Physiological, Pathological, and Legal Relations; adapted to the Use of the Medical Jurist, Physician, and general Chemist. By Theo. G. Wormley, M.D. Published by Wood & Co., New York.

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Leitfaden der praktischen Physik zunächst für das physikalische Practicum in Göttingen. F. Kohlrausch, Leipzig.

Die barometrischen Höhenmessungen u. ihre Bedeutung für die Physik der Atmosphäre. R. Rühlmann, Leipzig.

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Therapeutische Wirkung des Papaverins u. Narceins. O. Lichting. Bonn: 1869.

Beiträge zu dem gerichtlich chemischen Nachweiss des Codeïns, Thebaïns, Papaverins, und Narceins in thierischen Flüssigkeiten und Geweben. Bernh. Schmemann. Dorpat.

De l'hyoscyamine et de la daturine, ètudes physiologiques, applications thérapeutique, par Ch. Laurent. Paris: Delahaye.

Versuche über den chemischen Nachweis des Curarins in thierischen Flüssigkeiten u. Geweben. Karl Koch, Dorpat.

Ueber den Zustand der Chemie in Frankreich. Von Dr. Hermann Kolbe, Prof. der Chemie an der Universität Leipzig. Leipzig: 1870. J. A. Barth.

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The Medical Herbarium. A Collection of Dried Samples of Medicinal Plants. By T. F. Allen, M.D., New York. Part 1st.

Handbook of Medical Microscopy. By Joseph G. Richardson, M.D., Microscopist to the Pennsylvania Hospital, &c., &c. Philadelphia: 1871. J. B. Lippincott & Co.

The Chemists' and Druggists' Almanac and Diary for 1871. London.

Draft of a proposed law to regulate the practice of Pharmacy, and the sale of poisons, and to prevent the adulteration of Drugs and Medicines. Published by the New Jersey Pharmaceutical Association.

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Das Chloral-hydrat. Eine kritische Zusammenstellung der in der Literatur veröffenlichten u. in den Göttinger Kliniken gemachten therapeutischen Erfahrungen mit Hinblick auf seine Wirkung und die begleitenden

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Le monde pharmaceutique. Journal des Intérèts scîentifiques et pratiques, moraux et professionnels du Corps pharmaceutique. Paris.

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The Druggists' Legal Directory. By Edward B. Sturges. Published by Evans, Stoddart & Co., Philadelphia.

American Journal of Pharmacy, published by authority of the Philadelphia College of Pharmacy. Fourth series, vol. 1, 1871. Edited by Prof. John M. Maisch. Monthly.

The Pharmacist and Chemical Record. A monthly, published by the Chicago College of Pharmacy. Eds., N. Gray Bartlett and Albert E. Ebert.

The Sixth Annual Report of the Alumni Association of the Philadelphia College of Pharmacy. 1870.

REPORT OF THE COMMITTEE ON ADULTERATIONS AND SOPHISTICATIONS.

It has been eleven years since a report bearing the above caption has been presented to this Association. Much of interest in this connection has occurred in the interim, that has or should have claimed the care and attention of the active, watchful pharmacist.

Mammon still reigns in many minds, and facts are not wanting to prove that her votaries are ever secretly planning, developing, and executing new schemes, to extend her kingdom and fill her coffers, at the expense of the sick, suffering, and helpless.

In view of the fact of its having been years since this matter

has been officially brought before you, your committee after careful consideration decided to collect from available sources, memoranda of the researches of different inquirers in this field, or some of the principal ones that have been published from time to time, preparing a short note of each, arranging them alphabetically, and introducing among them, the individual observations of the members of the committee during the year.

It was thought best to divide the *material* into three classes:

1st. Drugs and commercial products.
2d. Chemicals.
3d. Pharmaceutical preparations and miscellaneous articles.

FIRST CLASS.

DRUGS AND COMMERCIAL PRODUCTS.

Drugs are largely adulterated; advantage is taken of the peculiarities of each kind, and similar substances (that can be procured, of course at a much lower price) are mixed in varying proportions; frequently water is the adulterant, generally, some inert substance, as flour, starch, terra alba, and sometimes the adulterant is not harmless in itself, merely diluting or lessening the activity of the drug, but it changes the properties of the article itself.

The greatest adulteration is practiced no doubt in powders, principally on account of the difficulty of detection. We have been informed that certain wholesale drug houses have rooms set apart for the purpose of mixing powders, and we were informed of a regularly organized adulterating department in a house in Cincinnati, with a foreman (no doubt, of large experience) to superintend this special branch.

The smaller houses send the drug with the adulterant to the mill, and here of course the miller becomes a *particeps criminis*. Spices, on account of their widely extended use, are of all powders most largely adulterated. Woody fibre, "veritable powder of post," sawdust, musty ship crackers, are all in demand. A Yankee friend of ours on paying a visit to a spice mill recently, heard a suspicious rattling in a tin box close by, and being of

an inquisitive turn of mind, seized an opportunity to gratify his ruling passion, and discovered roasted peas being worked up into no doubt *pure* ground pepper. Startling revelations might be made if a spice miller could be compelled to disgorge his ill-gotten knowledge. The only safe way to get pure powdered drugs is to pay a good price, and buy from conscientious parties who are above suspicion.

Some wholesale druggists of undoubted character and ability have established mills on their own premises and do their own powdering; but it is to be regretted that it is not a paying business for them, principally because they cannot and will not produce a fine handsome-looking powder for the same money that a professional miller can, and use the means that he does, and sad to relate, the number of pharmacists who are influenced by the trifling advance in price, are continually on the increase. As long as this latter fact remains to be a verity, the adulteration of powders must flourish.

Below will be found the list of articles as above noticed.

Assafœtida has attracted some attention in the Philadelphia and New York market on account of a lawsuit growing out of a conditional sale of twenty-five cases to a wholesale drug house by a broker. The conditions of the sale not being fulfilled (according to the druggist's version), he declared that the sale was cancelled, and the broker objecting, the matter found its way into court. The court decided in favor of the druggist, but the broker has appealed from the decision, and the affair is not yet settled.

The profession at large profit by this transaction, for the subject of adulteration in assafœtida has been brought prominently before them. An analysis by Prof. Maisch of five samples, showed the presence of 57, 44, 15, 51 and 62 per cent. of impurities; average 45 per cent.

The impurity consisted chiefly of sulphate of lime, which Prof. Maisch says is largely used to mix with the resinous matter agglutinating the tears. Commercial assafœtida is unquestionably greatly adulterated, but this lot seemed worse than usual; but to show the spirit actuating some in the trade, one

of the largest wholesale druggists in the country (on being questioned about this very lot of assafœtida, as he was about negotiating for the purchase), said that "he did not care if it was all brickbats, if he could make fifteen cents per pound on it."

Annatto is a grossly adulterated drug, as is well known. W. Laird, of Dundee, found 85 per cent. of residue, after exhausting it of coloring matter, which proved to be largely composed of starch, or flour and salt. London Pharm. Jour., Sept., 1868.

Attar of Rose.—This report would be very deficient if it omitted to speak of this extensively adulterated product. Purified geranium oil derived from a grass of the genus Andropogon is extensively used in Turkey as an adulterant. Alcohol is sometimes used there also. Lond. Pharm. Jour., Dec., 1867.

A clumsy but frequent adulteration by the wholesale druggist here is to make a mixture of alcohol and castor oil, half and half, and dilute the attar according to price wanted; this can of course be detected by putting a drop on a slip of white bibulous paper, and noticing whether the stain entirely disappears.

Burgundy Pitch.—There is so little of the true in the market that it seems as if the best the pharmacist can do now, is to see that he gets a good fictitious article, and one having considerable aromatic odor. Daniel Hanbury, of London, has written an interesting paper on Burgundy pitch as it is found in the English market. London Chemist and Druggist, Sept. 14th, 1867.

Beeswax is adulterated with tallow and paraffine; the latter is believed to be quite a frequent adulteration. Hager suggests as a test the application of potassa, benzine, and sugar of lead. See Amer. Jour. Pharm., 1869, p. 418. Another mode of detecting the presence of paraffine is the lower melting-point, pure wax melting at 151.5°, and wax with 13 per cent. paraffine only 139°. See Amer. Jour. Pharm., vol. xlii, p. 536. Wax is also adulterated with rosin and stearine.

Barks.—There is at present a large quantity of poor Peruvian bark in the country; samples representing several hundred

ceroons have been tested, and found to contain no quinine at all. What becomes of the bark it is hard to say; some no doubt finds its way into the numerous quack tooth powders, and it would be charitable to think it all went this way if we could, but powdered red and yellow barks have been sold so low lately that it is hard to resist the conviction that it is sold for good powdered bark at adulteration prices.

Calendula officinalis.—It would be hard to believe that an *adulterant* was adulterated, but it is so in the case of marigold. Prof. Maisch has seen it contaminated with the florets of Tagetes erecta, or the so-called African marigold. See Amer. Jour. Pharm., vol. xxxix, p. 306.

Cochineal.—Finely powdered sulphate of baryta is fixed upon cochineal by some glutinous material. Cochineal leaves $1\frac{1}{2}$ per cent. ashes; in five samples of adulterated cochineal 8, 12, 16, 18, and 25 per cent. of the baryta salt was found. Der Apoth., ix, No. 2. A mode of testing cochineal is detailed in the American Chemist for April, 1871, reprinted in Amer. Jour. Pharm., June, 1871.

Copaiba.—Good copaiba can be procured in the market for a reasonable price, but adulterated copaiba is not unfrequently met with. Your committee have information that a firm doing business in a town in Indiana make a good-looking fictitious copaiba from castor oil, rosin, and oil copaiba. They ship it to New York, and it is there disposed of. We endeavored to procure a sample of this article but were not able; the proportions were ascertained that compose this sample of Western ingenuity, but have slipped the memory of your reporter. A very curious adulteration of this article has been reported lately. Hager mentions one of oil of sassafras detected by boiling with alcohol. Am. Jour. Pharm., vol. xlii, p. 520.

Elder Flowers are frequently seen in the market with the smallest proportion of flowers; the cymes are collected with as much of the peduncle as possible. Am. Jour. Pharm., vol. xxxix, p. 305.

Gum Arabic.—There is a great deal of good gum arabic to

be found, and it is believed that among the fine grades little adulteration exists. The absurd mixing of the powder with sand and marble dust is still practiced. The writer has a sample now in his possession so adulterated; this is so readily detected that a novice could scarcely overlook it. Gum arabic is sometimes adulterated with gum senaar; for a mode of detection see Amer. Jour. Phar., vol. xli, p. 420, or Zeitschr. d. Oester. Apoth. Ver., 1869, 209, 210.

Ipecac.—Samples of ipecac differing in appearance from the usual root seem to turn up periodically in the market; they pass around the circle of experts in the trade, each one giving an opinion most likely different from any of the rest, and the result is that the holder of the parcel has to accept a low figure; the purchaser powders it, and away it goes on its mission either of healing or deception. Powdered ipecac sometimes has to be strengthened with tartar emetic to relieve it of general weakness and debility arising from exhaustion. Sulphuretted hydrogen would be apt to discover this fraud.

Jalap.—Considerable temptation to adulterate jalap has been removed within the past few years on account of the low price that it is quoted in the market. Dr. Squibb describes a jalap that yielded but 3.3 per cent. of resin, and had every appearance of being soaked in alcohol in Mexico previous to shipment. Proc. Amer. Pharm. Assoc., 1867. Such a jalap would make a fine-looking powder, and no doubt was made use of that way. Jalap is so easily assayed that there really seems but little excuse left for the pharmacist. The moral effect of say eight or ten pharmacists rejecting a sample of powdered jalap after carefully assaying it, and throwing it back on the hands of the wholesale dealer, would be much more deeply felt than many notices in an adulteration report. Profs. Maisch and Procter give an interesting account of a false jalap in vol. xvi, p. 389, Am. Jour. Pharm.

Lard is a difficult article to get pure in some localities. Vidal, of Lyons, speaks of an adulteration, the lard containing 50 per cent. carbonate of soda. The most frequent adulterations met

with here are water, starch, terra alba, &c. Those who can get farmers' lard are generally the best off. A kind obtainable in Philadelphia, which comes to market encased in corn-husk, is almost always pure.

Lycopodium has been met with in the market adulterated with starch. The microscope will easily detect this fraud, especially if the powder is viewed floating on water containing a trace of iodine.

Manna has been successfully imitated; an interesting paper is published on an artificial flake manna in the Pharm. Journ., London, April, 1870. Am. Journ. Pharm., vol. xviii, p. 348.

Oil of Cloves has been for a long time a rather unsatisfactory article to deal in, chiefly from the fact that large quantities have been smuggled into the country, and, of course, sold below the market price. A raid by the revenue officers had the effect to raise the price to a point at which manufacturers could dispose of their article, and it was amusing to notice the increased demand for the domestic article during and immediately after the excitement caused by the descent. Holders of the low-priced oil became very much frightened, and some even went so far as to tear out leaves in their invoice and sale books, which might be used as evidence against them.

Several adulterations in it have been noticed lately; one very curious one is with carbolic acid, which Hager, that persistent enemy of adulteration, has ventilated. This might be a serious deception, the refractive property of carbolic acid assisting the deception, but it is not believed to exist to any extent. Oil of cloves mixed with copaiba has also been noticed.

Oil of Lemon has been met with adulterated with 33 per cent. fixed oil. See Am. Journ. Pharm., vol. xv, p. 387, note by C. Lewis Diehl. The recent high price it has been commanding will, no doubt, stimulate this practice. Fortunately, when adulterated with alcohol, it keeps better than pure oil, but it is yet preferable to add the alcohol for oneself.

Oil of Peppermint is frequently adulterated. Prof. Maisch has been convinced that oil of peppermint is not as apt to be con-

taminated with oil of fireweed as with oil of erigeron, and makes some conclusive statements in regard to it. See Amer. Journ. Pharm., vol. xviii, p. 120. Alcohol and oil of turpentine are the principal adulterants.

Olive Oil.—It is to be regretted that we do not know more about detecting adulterations in this most useful and largely used product; but there are so many oils which closely resemble it in color, taste, and odor, that it becomes an easy matter to deceive. Lipowitz recommends bleaching powder for the purpose of detecting the adulteration of olive oil with oil of poppy seed. Am. Journ. Pharm., vol. xvii, p. 132. It is said that large quantities of cotton seed oil leave this country and come back to us with a genuine imported label on it; we know that it is sold as olive oil here; it is often called Union salad oil, and as salad oil, thus the uninitiated are deceived.

Opium.—There are not many *new* adulterations to notice in opium; an unusual proportion of leaves may often be observed, and a stray bullet or piece of quartz may often be picked out; the monotony is sometimes relieved by finding a considerable quantity of starch. James T. King, in Am. Journ. Pharm., vol. xvii, p. 1, found 14 per cent. of moist starch in one sample, and sometimes a powder resembling sulphate of lime is used; the opium, when treated in this way, becomes hard very soon, but good opium can be had now in the market at a reasonable price. Powdered opium mixed with powd. ext. of liquorice is yet to be seen, and some druggists regularly send their proportion of ext. of liquorice with their opium to be ground at the mill. The large quantity of government powdered opium thrown on the market at the close of the war, had the effect of supplying the trade with a good powder; but this, though occasionally seen now, has almost disappeared; one druggist told us he bought up a half barrel of opium pills, and had them powdered for his use. This powder would then contain 16 per cent. of soap as an adulteration, granting that the pills had been made according to the U. S. P. formula.*

* Prof. Maisch states that these pills were made at the Army Laboratory in Philadelphia, and contained 20 per cent. of soap.

Rhubarb.—Government powdered rhubarb, put up in 8-ounce bottles, bearing the seal and label of the U. S. A. Laboratory, Astoria, L. I., 1863, has been examined by Mr. A. E. Ebert, and found to have no cathartic properties whatever, but a decided astringent effect on the bowels. Prof. Maisch has published a mode of detecting the adulteration of rhubarb with turmeric. Am. Journ. Pharm., vol. i, 1871, p. 259.

Saffron still seems to be a favorite article to adulterate. When the florets of Calendula officinalis, carthamus, arnica, and fuminella are mixed with it they may be detected by the sulphuric acid test. Chalk and sulphate of lime are among the recent adulterations noticed, as much as 23 per cent. of chalk having been discovered in one sample. Glucose has been used to keep it moist and increase its weight. Deutsche Gewerbezeitung, 1869, No. 22.

Sarsaparilla has been making its appearance within the last few years of very poor quality, the Honduras variety in particular. The outside of the bundle may appear quite bright and clean, but when the inside is exposed to view, a system of rascality is often brought to light that was not thought of, lumps of clay, pieces of foreign root, large woody pieces of the caudex, &c., &c., and plenty of dirt, are to be seen. On one occasion a friend of the writer was engaged in chipping and bruising about three or four hundred pounds for a wholesale druggist, and several bundles had been opened having the above bad character, when a disagreeable itching led to the disclosure that it was also adulterated with fleas! *This* lot ought certainly to have been rejected by the drug inspector.

Senega has been found mixed with cypripedium, by as good authority as Dr. F. A. Flückiger. It is not rare to see it with considerable of the stem attached, and with more dirt adhering to it than it ought to have.

Senna as a general thing has to be garbled half away before it is in a passable condition. What a saving in freight alone might be effected, if senna could be garbled in Alexandria?

Soap, Castile, still comes to us containing as high as 30 per

cent. of water, and some even more than that. A lot which had been in store several days, lost in drying 29 per cent. White Castile soap, sold as pure Bee brand, examined by Mr. A. E. Ebert, proved to be a cocoanut oil soap.

SECOND CLASS.

CHEMICALS.

Chemicals are frequently found adulterated, but on account of the facility with which frauds can be detected in them, adulteration cannot be safely carried to the same extent as in the case of powders, essential oils, &c., &c.

In one case a chemical test is applied, in the other a physical test often has to suffice, and the test-tube and reagent bottle are not as liable to err as the more varying physical tests of taste, sight, and smell. The laws of chemical combination are fixed and unalterable, whilst the physical senses differ in individuals to an unlimited extent. The imported chemicals most frequently are found lacking in quality; one reason for this is, that the purchaser has not as sure a means of redress as he has in buying from a domestic manufacturer. If the product of a home manufacturer is found out of the way, by applying to him, the matter can be remedied, but a letter on the subject to a foreign manufacturer would undoubtedly be laid aside with a note appended, "Don't understand this," and nothing further would be done in the matter, because the complainant is too far away to do any harm.

But there are a number of chemicals that do not come up to the mark of home production, and if the trade would only examine and expose these preparations, the number might be greatly reduced.

Acetic Acid is sometimes met with, weakened with water, and its large use by vinegar manufacturers is sufficient temptation to adulterate it with dilute sulphuric acid, but vinegar gets its full share of sulphuric acid, as any one will be likely to find who will take the trouble to collect samples from the grocery

stores in the large cities and test them. Six samples on being tested, gave a precipitate with chloride of barium, of sulphate of baryta in varying proportions.

Acid, Muriatic, chemically pure, has been tested by Mr. A. E. Ebert, which contained arsenious and sulphurous acids. This was made by a Western manufacturer. It cannot be called an intentional adulteration; doubtless resulting from insufficient purification; it is, though, a contamination and unfit to be called chemically pure.

Acid, Sulphuric, C. P., has been sold containing a large proportion of sulphate of lead. A druggist of large experience informed the writer that he purchased one pound of C. P. sulphuric acid from a large manufacturer in New York, to make officinal dilute sulphuric acid. After mixing the acid and distilled water and allowing it to stand over night, a heavy precipitate of sulphate of lead subsided. This is inexcusable, and shows great carelessness, if not an actual attempt at fraud, and raised the question whether the ordinary sulphuric acid had not been sold just as it was.

Sulphuric acid has been found containing a certain proportion of a cheap salt like sulphate of soda or magnesia, added for the purpose of increasing its specific gravity, and giving it body. J. Fleuscher from D. Indust. Zeit., 1869, 208.

Tartaric Acid has been met with containing 50 per cent. sulphate magnesia. Dr. W. H. Pile, of Philadelphia, has a sample of it in his possession, and first noticed it. Alum is said to be mixed with tartaric acid to increase the profit, but we were unable to obtain a sample so adulterated.

Alum frequently contains iron, arising, no doubt, from carelessness in the manufacture, rather than intentional adulteration, and it would come more under the head of a contamination. It is apt to contain free acid also; this has been noticed particularly in the English article, but it did not exist to an extent that would unfit it for most uses.

Ammonia Carbonate is the victim of a gross imposture; a party in Chicago manufactures it from water of ammonia, glue,

and bicarbonate of soda. The bicarbonate of soda and water of ammonia, we are informed by Prof. Maisch, forms, when dry, a hard translucent mass, resembling genuine carbonate.

Aqua Ammoniæ, F. F. F.—The old-fashioned term F. F. F., as above applied, has been greatly disgraced of late years. It *used* to mean strong water of ammonia 20°, but by a rapid system of decay it has degenerated into a mere trademark. Of course those using it as such do not tell their customers of this fact, but leave them to find it out for themselves. A sample marked and sold as F. F. F., on being tested by its spec. grav., was found to contain 9.60 per cent. of ammoniacal gas instead of 17 per cent.

Ammonia Muriate is sometimes met with of very poor quality; iron is often visible on the surface, and becomes still more apparent when dissolved. The purified granular salt should be the only one sold at the dispensing counter.

Antimony, Black Sulphuret, has received considerable notice lately on account of the amount of adulteration practiced, galena (sulphide of lead), quartz to the amount of 30 or 40 per cent., clay, &c., &c. A good article is, however, procurable.

Arsenic, Powdered, is very apt to be adulterated; sulphate of lime, sulphate of baryta, &c., are used. The pharmacist should purchase and dispense the lump arsenious acid alone.

Bismuth metal almost always contains arsenic. A curious transaction in this article occurred lately. A broker made a sale of about 400 lbs. to a manufacturer, the owner being a New York merchant. When it came to hand it was examined, and found to be pretty good *antimony;* fortunately for the manufacturer, the sale had not been completed, and, of course, it was cancelled. The two metals resemble one another, but any one accustomed to handle them could easily detect a difference. If the sale had been effected, and the parties had cleared out, a handsome profit of over $1100 would have been realized, bismuth being about twenty times the price of antimony.

Bismuth Subnitrate is said to be adulterated with phosphate of lime to the amount of 28 per cent. Am. Journ. Pharm., 1868,

p. 334. Parcels have been found contaminated with ammonia, arising probably from insufficient washing. This is an article that affords considerable temptation, a white, insoluble powder used largely, and selling at a price that would afford a handsome margin if adulterated even 25 per cent.; but one reason that pharmacists should be more watchful in regard to this article, is that on account of its being most usually dispensed just as it is bought, without dissolving or manipulation in any way, an adulteration is very apt to escape attention, and hence offers more than an ordinary temptation. The lamented John D. Owen, of Louisville, Ky., examined some of the principal brands in the Philadelphia market, and found them free from adulteration, and it is believed that the salt made in this country by the principal manufacturers is rarely tampered with.

Citrate of Iron and Quinine is seldom found made strictly according to U. S. P. formula; principally because it will not produce a sufficiently soluble salt, manufacturers add citrate of ammonia to make it soluble, and some leave out a considerable portion of the quinia to accomplish the same end, and when citrate of ammonia is added and quinia left out, there is certainly no difficulty in making a soluble salt. Five different brands gave 5.2, 10, 12.4, 15, and 15 per cent. of quinia, or what was assumed to be quinia. A known solution of the salt having been treated with water of ammonia in excess, and the precipitate washed, dried, and weighed, the precipitates all gave evidence of containing *some* quinia by a qualitative test, but cinchonia having become so fashionable lately as a *substitute* for quinia, it would hardly be safe to say that the precipitate in each case was wholly quinia, and in three of the above cases, whatever the precipitate was, it was deficient in quantity. The writer intends to pursue the investigation of this subject further, and report.

Chloralhydrate has been discovered mixed with alcoholate; one test is the difference in their boiling-points. Pure chloralhydrate boils at 95° C., and the compound of chloral and ethylic alcohol boils at 115°. Pharm. Journ., July 30, 1870. Another means of detection is sometimes used; sulphuric acid, when ap-

plied to pure hydrate, remains colorless; with the alcoholate it turns brown. When warmed in nitric acid of 1.20 spec. grav., chloralhydrate gives no reaction, or but slight; with the alcoholate a vehement reaction, with evolution of nitrous oxide gas, takes place.

Chloride of Calcium containing a large excess of caustic lime has been noticed by Mr. A. E. Ebert, of Chicago, in an article made by a Western manufacturer; and crystallized chloride of calcium was sold for the dry salt by an Eastern manufacturer, no allowance being made for the large percentage of water existing in the crystallized salt.

Chloroform is still sometimes met with diluted with alcohol, and some that is sold is really not fit for inhalation purposes on account of not being sufficiently purified. There is reason to believe that partially decomposed chloroform has been sold, through ignorance, on the part of the dispenser. Pure chloroform will, under certain circumstances, decompose, especially when perfectly free from alcohol, and, of course, on showing the slightest sign of decomposition, it should be rejected for internal use. A conscientious, careful pharmacist was lately very much disturbed about the quality of a well-known brand of chloroform, on account of its imparting to C. P. sulphuric acid a very dark brown color. On looking into the subject more carefully it was shown that the chloroform had been transferred to a bottle that contained considerable dust, and the sulphuric acid thus became colored, when a sample that was put into a clean bottle showed very slight coloration on being treated with the acid; this experience shows the necessity of being very careful in applying this test. Nitrate of silver is useful in detecting decomposition in chloroform, by showing a precipitate of chloride of silver on account of liberation of the chlorine, in process of decomposition.

Cream of Tartar, it is hardly necessary to say, is yet grossly adulterated, and the term "Strictly Pure" (merely used as a trademark), Pure, No. 1, No. 2, are well known, with the exception of the first, to mean varying proportions of terra alba and cream of tartar.

Epsom Salt has been found in the Western market, by Mr. F. Mahla, of Chicago, to be nothing more than finely crystallized Glauber salt. There is, however, little danger to be apprehended from this adulteration now, as they are sold at about the same price, and it would not pay to run the risk of detection.

Ether requires watching. Ether fortior is sometimes sold for inhalation purposes, containing a large proportion of alcohol; this may possibly arise from the druggist dispensing *photographic* concentrated ether, which is purposely made to contain alcohol, in order to dissolve the gun-cotton, and this, by the way, leads to a good test for ether. If a small quantity of gun-cotton added to the sample of ether is not disintegrated after standing a few minutes, the absence of alcohol may be known. But the hydrometer should be used freely, and ether rejected that is not up to the standard.

Iodoform has been noticed of a light canary color, and although having the appearance of a crystalline structure, the distinct separate crystalline plates could not be distinguished. On being treated with ether, a considerable portion refused to dissolve. The writer did not have an opportunity to examine the residue, but it was probably iodate of lime, as the article was undoubtedly crude iodoform, never having been purified.

Lead, Acetate of, was in the market, which contained a large percentage of crystallized nitrate of lead, and a lot of so-called damaged acetate of lead was offered to a factor of hair preparations, which proved to be sulphate of zinc *damaged* and in lumps. A. E. Ebert reports the above. Does not the offering of such a parcel to this gentleman of "Warranted Purely Vegetable" proclivities, argue a low opinion of his sense of moral rectitude? First-class druggists rarely or never have such impositions OFFERED them. A little further on in this report a condensed account of Prof. Chandler's wholesale revelations of this hair preparation business will be found.

Lime, Precipitated Carbonate of, has been offered of very poor quality, containing iron in sufficient proportion to color it a very light fawn color. After being treated with hydrochloric acid, a

solution of ferrocyanide of potassium soon changed the mixture to a beautiful dark blue. The supposition is that it is merely ordinary chalk, prepared to deceive.

Morphia Sulphate is frequently open to suspicion. One party attempted to sell an article in a far Western city which did not contain an iota of morphia; when placed on a red-hot plate it did not seem to lose a fraction in weight and was insoluble in water. It had a slightly green color, and but few could have been deceived by it. An ingenious adulteration in New York City was discovered lately. Sulphate of quinine was put up in the regular sulphate of morphia bottle, and, of course, labelled and stamped as if it *was* pure sulphate of morphia. This could easily be detected by the simple test of difference in solubility, if suspected in time, but a peddler could readily dispose of it to a class of druggists who are willing to buy anything so "it's cheap," and such deserve no sympathy when they are duped.

Phosphorus, according to Dr. C. J. Rademaker, of Louisville, Ky., sometimes contains arsenic. Am. Jour. Pharm., xlii, p. 507.

Potassium Bromide in granular form, has been observed by Mr. A. E. Ebert to contain considerable water of hydration. This salt can be procured in large quantities now of excellent quality, and at very low figures, consequently there is still less excuse for adulterating it.

Potassium Iodide has frequently been found in bad company. Bromide of potassium is used to adulterate it quite often. A sample of Eastern make, which consisted largely of bromide, was returned by a Western drug house. This is a very specious fraud, and one apt to deceive the most wary. Iodide of potassium, made in New York, was found to contain carbonates in considerable quantities, by Mr. A. E. Ebert. When it contains carbonate of potassa, it is very liable to adhere to the sides of the bottle and attract moisture.

Quinia Sulphate is the salt which, more than any other, has received the attention of the avaricious fraternity. Sulphate of

lime, mannite, cinchonia under the name of sweet quinine, cinchonia under the name of cincho-quinine, muriate of cinchonia under the name of light sulphate of quinine, and muriate of cinchonia as French quinine, have all lately been introduced with the intention of furnishing this indispensable article "to a generous and discriminating public" at figures to please the most fastidious. A secondary consideration, of course, is the enriching of the coffers of the perpetrators. It is to be hoped that the same activity in detecting these frauds will be sustained, and that the journals will publish and republish the exposures, that all may be put on their guard. The old trick of substituting salicine, was discovered a few months ago by a physician in Philadelphia. He prescribed a large dose of quinine, and not getting the effect he should, he inquired of the patient, particularly, whether the urine had any unusual odor, and he immediately said it had the odor of teaberries. This led him to suspect the addition of salicine, and on looking further into the subject, his suspicions were fully confirmed.

Rochelle Salt has been offered for sale containing at least 25 per cent. of sulphate of soda. Chloride of barium and nitric acid will effectually detect this deception. Pharmacist, September, 1868.

Santonine was to be seen last spring in the New York market contaminated with small particles of mica. As santonine is generally prescribed in crystals or powder, this fraud might have been carried on a long time before being disclosed. It may be easily detected by placing on a red-hot plate, when the santonine will be consumed leaving the mica.

Silver Nitrate made for the government was sold in Chicago, which contained 5 per cent. of copper. In a lot of government nitrate of silver, examined by the writer, pieces could be picked out of an emerald green color, and it looked as if it had been made by simply dissolving coin or other alloy of silver and copper in nitric acid, and crystallizing without any attempt at purification.

The adulteration of *Sulphur Precipitated*, is the title of an

article in the London Pharmaceutical Journal for February, 1869, by Prof. Attfield. Out of eight samples examined but one was pure; six of the rest contained upwards of 66 per cent. of sulphate of lime. Our English brethren seem to use this adulterated article almost exclusively. It is cause for congratulation that we are, at least, measurably spared this infliction; that manufactured in this country is generally the pure article.

Sulphur, Flowers of, containing 50 per cent. of gypsum, has been noticed. Sometimes ground sulphur is sold for the sublimed; but few, however, would be deceived by this fraud, as there is a great difference in appearance.

Tartar Emetic, though not used as much as formerly, is still not beneath the notice of the adulterators; two samples out of eight were found adulterated to the extent of 8 and 11 per cent. with cream of tartar. A further report on this will be found in the answer to Query 24, to be presented to the Association this year.

THIRD CLASS.

PHARMACEUTICAL PREPARATIONS AND MISCELLANEOUS ARTICLES.

Citrate of Magnesia has been for a long time a troublesome article. Many and various formulas have appeared from time to time in the journals, and the expedients that have been resorted to, looking to a prevention of precipitation, have been innumerable. The honest apothecary wonders how it is that his enterprising neighbor at the next corner always has a bright clear solution, and can sell it for twenty cents per bottle. He at last finds out that the so-called citrate of magnesia contains neither citric acid nor magnesia, but is merely a solution of tartrate of soda.

Extracts afford ample opportunity for adulteration, and it is very common to find solid extracts containing all the chlorophyll and mucilaginous constituents of the plants from which they are

obtained. Damaged drugs are worked up into extracts, and it is believed that the poor quality of extracts is to be attributed more to this fact than to excessive heat in evaporating, which is considered by many to be the cause. A rare adulteration was recently found in a rather large lot of an expensive extract. It was no less than a machinist's cold chisel, found in the bottom of the jar; it weighed four ounces. This, however, may have arisen from carelessness. The manufacturer was willing to exchange it for an equal weight of extract.

This reminds us of an adulteration in socotrine aloes which was discovered in process of purifying the aloes. A rude native knife was found imbedded in it, together with a large quantity of goatskin, in pieces and strips, hair, &c.

Extract of Liquorice is rather a badly-used article. It is sometimes adulterated with charcoal, and it is not unfrequently met with containing gritty particles, very perceptible when chewed, showing the presence of inorganic matter of some kind.

It is difficult to understand how *Extract of Calabar Bean* can be sold at the price it is, say $1.25 per ounce. A. E. Ebert paid $4 per pound for the bean alone, and obtained one ounce of extract as the yield; then there is the cost of menstruum, labor, waste, &c., to be added. Pharmacist, Dec., 1870.

Fluid Extracts offer the same facilities for the exercise of this most reprehensible business. Weak fluid extracts are not rare, but as they can generally be traced to the manufacturer, his reputation is apt to suffer. Nothing can be done in the way of testing the most of them by chemical means, and the manufacturers, knowing this, have a screen to hide behind. But as in the case of powders and extracts the only reliance is on the character of the men who make them. The writer is acquainted with a manufacturing pharmaceutist who made *Fluid Extract of Ergot* for the same price that the *crude drug* was selling for in large quantities. This, of course, could not be ounce for ounce, and it would barely pay such a manufacturer to make two ounces of it represent an ounce of the drug. His defence was that a wholesale druggist had limited the price of two

hundred pounds of the fluid extract, and he was going to make it for him at his price, and of course the druggist was alone responsible, the manufacturer not troubling himself with what the druggist was going to do with it. Think of a physician relying on a dose of such a fluid extract in a most critical case! a thing almost sure to occur.

Hair Tonics, Washes, Restoratives, &c., have been subjected to an examination by Prof. C. F. Chandler, of New York. Of sixteen samples, all, with one exception, contained lead, and two that professed to be vegetable contained 5 and 7.13 grains of lead in a fluid ounce.

Lotions and Washes for the Complexion, Enamels for the Skin, &c., have also been severely handled by him. Am. Journ. Pharm., vol. xlii, p. 362.

The efforts of Wittstein, Hager, Jacobsen, and others, in publishing the composition of secret remedies, should be appreciated by all, who wish to rid the profession of this monstrous evil, quack medicine. Am. Jour. Pharm., vol. xliii, p. 110. A little book entitled Taschenbuch der Geheimmittellehre, von Dr. G. C. Wittstein, Handbook of Secret Medicine, contains an analysis of many of them, and it only proves what has long been suspected in regard to them.

The ingredients composing most quack medicines, are those constantly employed by regular practitioners; and printers' ink and popular credulity have more to do in effecting a sale than any other agency.

Syrups are now made with varying proportions of glucose, particularly those used for soda water; it gives them body without interfering with the flavor of the *fruit?* and whilst it cannot give very much sweetness, it does not take much away. Glucose also enters as an ingredient in the now popular cordials, syrup for raspberryade, &c., some druggists doing a large business in supplying the liquor stores with these requisites. Its presence may be detected by Trommer's test readily.

Hoping that this report may meet some of the objects which

led to the appointment of the committee, it is most respectfully submitted.

JOSEPH P. REMINGTON, Chairman,
ALBERT E. EBERT,
W. T. WENZELL,
Committee.

REPORT OF THE COMMITTEE ON UNOFFICINAL FORMULAS.

The committee has collected, and respectfully reports, the following unofficinal formulas:

Simple Elixir.

℞. Olei Anisi,
" Carui, āā . . . . gtt. ij.
" Cinnamomi, . . gtt. vj.
" Fœniculi, . . . gtt. ij.
Alcohol., ... ℥xviij.
Curaçoa, ... ℥vj.
Sacchari, ... ℥xx.
Aquæ,
Aq. Rosæ, āā . . . . Oj.
M. S. A. Color to suit.

Comp. Elixir of Taraxacum.

℞. Ext. Taraxaci Fl., . . f℥vj.
" Gentianæ, . . . f℥j.
Ol. Aurantii Dulc., . . gtt. c.
" Cinnamomi, . . . gtt. xij.
" Anisi, ... gtt. x.
" Carui, ... gtt. v.
" Coriandri, ... gtt. xx.
Ext. Glycyrrh., . . . ℥j.
Syr. Pruni Virg., . . Oiiss.
Alcoholis, ... Oiss.
Aquæ, ... Oiv.

Mix the oil with alcohol, and the extracts with the syr. prun. vir. and aquæ, and mix together and filter.

Elixir of Pepsin, Bismuth, and Strychnia.

℞. Ammon. Cit. Bism., . 512 grs.
Strychnia, ... 8 "
Morson's or Boudault's
Pepsin, ... 2500 "
Oil Anise,
" Caraway, āā . . gtt. ij.
" Cinnamon, true, . gtt. vj.
Tinct. recent Orange-
Peel, ... ℥j.
Alcohol, ... ℥xix.
Simple Syrup, . . . ℥iv.
Boiling Water,
Rose " āā . . Oj.
Sugar, ... ℥xx Av.

Dissolve the strychnia in the alcohol with the oils, the pepsin and bismuth in the hot water, add the sugar, and dissolve with the aid of the rose water, color with solution of carmine, and filter. Contains 5 grs. pepsin, 1 gr. ammonio-citrate of bismuth, $\frac{1}{64}$ gr. strychnia.

Elixir of Phosphate of Iron, Quinia, and Strychnia.

℞. Ferri Sulph., . . . ℥v.
Sodæ Phosph., . . . ℥j.
Quiniæ Sulph., . . . grs. cxcij.
Acidi Sulph. Dil., . . q. s.
Aquæ Ammon., . . q. s.
Strychniæ, ... gr. vj.
Acid. Phosphor. Dil., . ℥xiv.
Sacch. Alb., . . . ℥xiv.
Ol. Cinnamomi, . . gtt. iij.
" Carui, ... gtt. j.
" Anisi, ... gtt. j.
" Fœniculi, . . . gtt. j.
Aquæ Fontan., . . . ℥viij.
" Rosæ, ... ℥iv.
Syrupi Cort. Aurant., ℥xij.
Caramel, ... q. s.

Dissolve the sulph. of iron in 1 oz. boiling water, and the phosphate of soda in 2 oz. boiling water. Mix the solutions, and wash the precipitated phosphate of iron till the washings are tasteless; with sufficient dil. sulph. acid dissolve the sulph. of quinia in 8 oz. of water; precipitate the quinia with ammonia water, and carefully wash it; dissolve the phosph. of iron and the quinia thus obtained, as also the strychnia, in the diluted phosphoric acid.

Rub the oils with the sugar, add the phosphate solution, and then the water and rose water, and syrup orange-peel (the syrup made from fresh orange-peel), and lastly the caramel, and filter.

Elixir of Bromide Potassium.

℞. Potass. Bromidi, ℥v and 160 grs.
Olei Anisi,
" Carui, āā . . . . gtt. iij.
" Fœniculi, ... gtt. ij.
" Cinnamomi, . . . gtt. ij.
Alcohol., ... ℥xviij.
Curaçoa, ... ℥vj.
Sacch. Alb., ... ℥xx.
Aquæ,
" Rosæ, āā . . . Oj.
M. S. A.

Elixir of Bromide Sodium.

℞. Bromidi Sodii, ℥v and 160 grs.
Olei Anisi,
" Carui, āā . . . . gtt. iij.
" Fœniculi,
" Cinnamomi, āā . gtt. ij.
Alcohol., ... ℥xviij.
Curaçoa, ... ℥xvj.
Sacchari, ... ℥xx.
Aquæ
" Rosæ, āā . . . Oj.
M. S. A.

Bitter Wine of Iron.

℞. Sherry Wine, . . . ℥xx.
Ammon. Cit. Iron, . 512 grs.
Quinine, ... 10 "
Sulph. Cinchon., . . 5 "
Citric Acid, ... ℥j.
Tinct. fresh Orange-Peel, ℥ij.
Simple Syrup, . . . ℥viij.
Alcohol, ... ℥ij.
Oil Cinnamon, . . . gtt. iv.
" Caraway, . . . gtt. iv.
M. S. A.

Elixir of Citro-Lactate of Iron.

℞. Ferri Lactat., . . ℥j and 96 grs.
" Citrat., . . . ℥ij.
Aquæ Destil., . . f℥xl.
Tinct. Winteræ Cort., f℥iv.
Alcohol., 80 per cent., f℥xxij.
Olei Cort. Aurant., . ℥j vel q. s
Syrup. Simplicis, . . f℥xxx.
Ess. Caryophylli, . . ℥j.
Acidi Lactici, . . . q. s.

Dissolve the lactate of iron by the aid of heat in the water, adding the

lactic acid if not dissolved; then the citrate of iron; when cold, the winter's bark and alcohol holding the oils in solution. Let it stand several hours and filter.

Elixir of Lactate Iron and Pepsin.

Dissolve 40 grs. Pepsin in a small portion of boiling water, and add to 1 oz. of the Elixir Citro-Lactate Iron.

Elixir of Bark, Iron, and Strychnia.

Dissolve 1 gr. Strychnia and 5 grs. Citric Acid in ½ oz. Water, and add to Oj Ferrated Elixir Bark.

Elixir of Bark, Iron, and Bismuth.

℞. Sulph. Quiniæ,	℈ij and gr. iv.
" Cinchoniæ,	℈j.
Olei Anisi,	
" Fœniculi, āā	gtt. ij.
" Cinnamomi,	gtt. v.
" Carui,	gtt. j.
Alcohol.,	℥xviij.
Curaçoa,	℥vj.
Aquæ,	
" Rosæ, āā	Oj.
Sacchari,	℥xx.
Ammon. Cit. Bism.,	512 grs.
Ammon. Cit. Ferri.,	512 "

Dissolve the quinia and cinchonia in the alcohol, add the curaçoa, rub the oils with the sugar, and dissolve with part of the water, the bismuth and iron, separately, in about 4 oz. of the water, and mix the whole and filter.

Ferrated Elixir of Bark.

℞. Quiniæ Sulph.,	℈ij.
Cinchon. Sulph.,	℈j.
Ol. Anisi,	
" Carui, āā	gtt. iij.
" Cinnamomi,	gtt. ij.
Alcohol.,	℥xviij.
Curaçoa,	℥vj.
Sacchari,	℥xx.
Aquæ,	
" Rosæ, āā	Oj.
Ammon. Cit. Ferri,	512 grs.

Dissolve the quinia and cinchonia in the alcohol, rub the oils with the sugar, and dissolve with part of the water; dissolve the citrate of iron in the water, and mix; lastly, add the curaçoa.

Elixir Cinchonæ.

℞. Quiniæ Sulph.,	℈ij and gr. iv.
Cinchoniæ Sulph.,	℈j.
Ol. Anisi,	
" Fœniculi, āā	gtt. ij.
" Cinnamomi,	gtt. vj.
" Carui,	gtt. j.
Alcohol.,	℥xviij.
Sacchari,	℥xx.
Aquæ,	
" Rosæ, āā	Oj.
Sol. Carmini,	q. s.
Curaçoa,	℥vj.

Dissolve the quinia and cinchonia in the alcohol, then add the oils and curaçoa; lastly, add the sugar, previously dissolved in the water, and rose-water, and filter.

Curaçoa Cordial.

℞. Tinct. Fresh Orange-Peel,	℥j.
Alcohol,	℥ij.
Syr. Simp.,	℥iij.
Mix.	

REPORT OF THE COMMITTEE ON LEGISLATION.

Your committee respectfully report that after the close of the Eighteenth Annual Meeting, the report of the Permanent Secretary on legislation, together with the laws passed in 1870 in the states of Rhode Island, Maryland, and Pennsylvania, was duly published, agreeably to the instructions of the Association, and sent to the governors and legislatures of all the states. From the information received by your committee, we take pleasure to state that the law applying to the city of Baltimore is in successful operation, working to the satisfaction of the public as well as of the pharmaceutical profession, and evidently tending towards raising the standard of pharmacy in that city not only, but also in the entire state of Maryland, in fact it is exerting its beneficial influence already upon other states.

The State Board of Pharmacy of Rhode Island have, in compliance with the law of 1870, presented their first annual report to the General Assembly of that state, in January last, and made suggestions for several modifications and simplifications of that law, which, having received the approval of the Attorney-General of Rhode Island, were concurred in by the General Assembly, and having been sanctioned by the Governor, resulted in the enactment of a more satisfactory law, in regard to which Mr. Albert L. Calder, President of the Rhode Island State Board of Pharmacy, has communicated the following:

By the old law, all practicing pharmacists in business at the time of its passage were entitled to registration.

By the new, *all persons* keeping, or intending to keep, open shop, &c., for retailing medicines, are required to give to the Board satisfactory evidence of their qualifications before being registered.

This important change, not made at the suggestion of the Board, required such an amount of time and labor to carry out that it is scarcely finished yet, and in consequence no prosecutions have been made. The Board intend giving one last and final call to all delinquent and dilatory ones to present themselves at their next meeting, and then put the screws on and try the new law, and I think it will stand fire and prove a great blessing to the community and of advantage to the pharmacists.

The act of 1870 required the Board to make prosecutions. The new act transfers this to the regular and proper authorities, as for the violation of any other act.

The act of 1871 reduces the poison list to what may properly be called the popular poisons, or such as are usually resorted to for murder and suicide, and the common emmenagogues. It also reduces the period of apprenticeship to three years, to be followed by examination, and some other minor particulars.

For reasons I have stated, it may be too soon to give an opinion as to the practical operation of the law, but nevertheless I have an opinion, and it is that we have got an excellent law and one that can be enforced and sustained by public opinion, and its enforcement will gradually purge the profession of many of its abuses, and tend to elevate it to the position to which it belongs.

I say gradually, because the Board felt that the power given them was great, and its abuse or too stringent application might defeat the object of the law, as seems to be the case in New York, and recognizing the fact that the condition of pharmacy in the state, and the absence of all schools or colleges or even associations where it is taught or even talked, presupposed ignorance, they placed the standard of qualification lower than would otherwise be the case for those already established in business, preferring to err in that direction rather than drive too many from business which might be their only means of support. This time will remedy. But for the newcomers and the apprentices, we give them to understand that they must know something. This already is having a good influence upon the latter, and is inciting them to study and a desire for knowledge, which is hopeful of the future.

I send herewith a copy of the law for your perusal and criticism. We think it a pretty good law, and one that covers about all the ground; one that the people will be glad to see enforced, and feel that they can have greater confidence in, and consequently greater respect for, the profession.

Much, of course, depends upon the character of the Board. A large discretion is given them, the judicious use or abuse of which will determine the value of the law. Ours has been pretty conservative, perhaps too much so, but we are hopeful of the best results.

A case of prosecution under the law has been commenced, and a preliminary examination held, the case having been continued. No decision has yet been rendered.

Our friends in the province of Ontario, Dominion of Canada, have succeeded in obtaining the enactment of a Pharmacy Act, which was approved on the 15th of February, 1871. This law, modelled after the Pharmacy Act of Great Britain, and similar in many respects to the draft of the law which was discussed at the Chicago meeting of this Association in 1869, establishes the Ontario College of Pharmacy, which institution is intrusted with the examination and registration in conformity with this law. Mr. Henry J. Rose, formerly editor of the

Canadian Journal of Pharmacy, has been appointed Registrar for Ontario.

In the state of New York, a bill was introduced by Mr. Irving, and passed, notwithstanding it was opposed by the College of Pharmacy of the city of New York, the bill drawn up by this institution being ignored. The law which was passed on the 28th of March, 1871, creates an examining board, composed of one pharmaceutist, one druggist, and two physicians, who are to be appointed by the mayor of the city, and hold office during his pleasure. The objectionable features of this law are, that the appointing power is vested in a political officer, without even a suggestive voice of the College of Pharmacy; that the existence of pharmaceutical educational institutions in this country and elsewhere is entirely ignored; that no allowance or provision is made for apprentices to learn the business; that the examiners are salaried officers, the salaries being fixed disproportionately high in consideration of the work to be accomplished, and in consequence whereof, the fees have been placed at extortionate figures; that the pharmaceutists as such are in the minority, instead of exclusively constituting the board.

The law is retroactive in this, that it directs the examination of all at present engaged in business; it is thought that on this account the law may probably be declared unconstitutional in case it should be legally contested, while on the other hand it has been contended that the entire law is to be regarded simply as a police regulation, and that on this account it will stand and be regarded in strict conformity with the constitution, and in the same light as the abatement of existing nuisances by boards of health and other authorities. The New York law, for the reasons above stated, has met with a great deal of opposition on the part of the educated pharmacists, and an effort will probably be made to have this objectionable law repealed during the coming winter, and replaced by one more just and more efficient, and probably embracing besides the city of New York, also Brooklyn.

Bills for the regulation of the practice of pharmacy have likewise been introduced, during the past winter, in the states

of New Hampshire, Massachusetts, New Jersey, Pennsylvania, Ohio, Michigan, and Illinois, and the subject has been agitated in several other states; they either failed or were simply postponed for future consideration.

In the state of Virginia a law was enacted regulating the sale of poisons; it simply provides for keeping of a poison book, and registering every sale of strychnia, arsenic, corrosive sublimate, and prussic acid.

In view of the fact, that the subject of legislation on the practice of pharmacy will come up again during the coming winter in a number of states, it is suggested that another Committee on Legislation be appointed at this meeting, with the same duties that devolved upon last year's committee.

We would likewise suggest, that the laws herewith presented be published in the Proceedings.

All of which is respectfully submitted.

J. M. MAISCH,
Chairman of Committee on Legislation.

REPORT OF THE STATE BOARD OF PHARMACY OF RHODE ISLAND.

TO THE HONORABLE THE GENERAL ASSEMBLY OF THE STATE OF RHODE ISLAND AT ITS JANUARY SESSION, A.D. 1871.

The State Board of Pharmacy, appointed by His Excellency the Governor, under the provisions of the act to regulate the sale of medicines and poisons, passed March 31st, 1870, herewith present their first annual report, as required by law, "on the condition of Pharmacy, together with a list of all persons registered as Pharmacists and Assistant Pharmacists."

Pharmacy, which in some countries of Europe, under the fostering care of government and laws, has arisen to the dignity of a science and a profession, is, in our own state, still in its infancy.

In several of the larger cities of the Union, colleges and schools of Pharmacy have been established, which are doing an excellent work in educating the young and elevating the profession to that position to which it properly belongs.

In our own state no such institutions exist; and but two graduates of such colleges are known to have been registered by your Board.

In the absence of all laws regulating and restraining the traffic in medi-

cine, it had come to be regarded as a mere mercantile trade, into which the ignorant as well as the learned have been able to enter at will, and by uniting with it other branches of trade, have competed favorably with their contemporaries, and there has been in consequence, but little encouragement to the student and apprentice to devote the necessary time and expense to a pharmaceutical education. This is not as it should be; and it is hoped that a judicious enforcement of the law which has been enacted, will tend to the better education of the pharmacist in all the requirements of his profession.

One branch of trade which has been to a large extent connected with the proper business of the pharmaceutist—that of indiscriminate liquor traffic—has proved a union which has not been, in all cases, in the interest of science or humanity, and for which the laws of the state are in part responsible.

By the existing laws of the state, it is made a criminal offence to sell ale, wines, or other strong liquors, or mixed liquors, &c., without a license. This has been construed, by the legal authorities of Providence, at least, to include alcohol in all its forms; and as most of the liquid medicines contain more or less of it in some shape, it has been ordered that all pharmacists shall take out a license. This license carries with it the right to sell wines and liquors, not only as a medicine, but as a beverage. Thus forcing a hundred or more persons—if the same rule obtains throughout the state—to become "common sellers" of liquor, whether they will or not. This has been a fruitful source of evil; inviting many ignorant and otherwise incompetent persons to assume the shield of respectability, which formerly, at least, attached to the business of the pharmacist, to carry on their less reputable trade, and the evil has increased to such an extent, that legislators publicly denounce the pharmacists as the worst liquor dealers of the state. While this is undoubtedly an exaggeration, there is too much truth in it, for the onerous taxes—state and national—required for the licenses, compels the dealer to cater for trade regardless of the uses to which his goods are applied.

In the present status of medical practice, alcohol in its various forms is regarded as one of the most valuable medicines. It is made officinal in the National Pharmacopœia in the form of wines, brandy, whisky, &c., and it is as much the duty of the pharmacist to keep his bottles supplied with these as with other medicines; but he should be restrained and compelled, if necessary, to confine his sales to the comparatively limited demand for medicinal purposes. And it would seem the part of wise and judicious legislation, in the interest of morality and humanity, and for the elevation of the profession, to so frame the law as to divorce as widely as possible these discordant branches of trade.

And your Board earnestly desire that some provision may be incorporated in the statute regulating the sale of liquors, to enable such pharmacists as desire to confine their traffic in them, within its legitimate limits as medicines, to do so without criminal violation of law.

The Board, immediately on their appointment and organization, caused circulars to be sent to all the practicing pharmacists of the state, calling

their attention to the provisions of the act requiring registration. Most of them promptly responded to the notice, and nearly all have been registered.

They also held six meetings for business, and for the examination of assistant pharmacists. Five of the meetings were held in Providence, and one in Newport, for the convenience of the assistants in that neighborhood.

Most of the gentlemen presenting themselves for examination exhibited a fair knowledge of pharmacy, as obtained from the shops, while but few possessed any knowledge of what may be considered as the collateral branches of chemistry and botany.

The Board have experienced some trouble arising from omissions and imperfections in the law, and in certain of its provisions they think it may be improved. To this end they have, at the suggestion of the Attorney-General, caused the act to be redrawn, it being found difficult to alter and amend the original.

And your Board would respectfully ask for the passage of the new act, which accompanies this report.

All of which is respectfully submitted.

Albert L. Calder,
O. Sumner,
Wm. B. Blanding,
Bela P. Clapp,
Norman N. Mason,
Robert J. Taylor,
Philip Caswell, Jr.

LAWS RELATING TO THE PRACTICE OF PHARMACY.

PASSED IN THE UNITED STATES AND IN CANADA IN THE YEAR 1871.

I. STATE OF RHODE ISLAND.

An Act to regulate the Sale of Medicines and Poisons, and to repeal Chapter 856 of the Statutes.

It is enacted by the General Assembly as follows:

SECTION 1. It shall be unlawful for any person, unless a registered pharmacist, or registered assistant pharmacist, in the employ of a registered pharmacist, or unless acting as an aid under the immediate supervision of a registered pharmacist, or a registered assistant pharmacist, within the meaning of this act, to retail, compound, or dispense medicines or poisons, except as hereinafter provided.

SEC. 2. Any person, in order to be a registered pharmacist or a registered assistant pharmacist, in the meaning of this act, shall be either a graduate in pharmacy, a practicing pharmacist, or a practicing assistant in pharmacy. Graduates in pharmacy shall be such as have obtained a diploma from a regularly incorporated college of pharmacy, and shall have presented satisfactory evidence of their qualifications to the State Board of Pharmacy. Practicing pharmacists shall be such persons as, at or prior to the passage of this act, have kept, and continue to keep, open shops for compounding and dispensing the prescriptions of medical practitioners, and for the retailing of drugs and medicines, and who shall give to the State Board of Pharmacy

satisfactory evidence of their qualifications and shall have declared their intentions in writing of keeping open shop for the compounding of prescriptions and the retailing of drugs and medicines; and such other persons as shall have given to the State Board of Pharmacy satisfactory evidence of their qualifications, and shall have declared their intentions in writing of keeping open shop for the compounding of prescriptions, and the retailing of drugs and medicines. Practicing assistants in pharmacy shall be such persons as have served three years' apprenticeship in a shop where the prescriptions of medical practitioners are compounded, and shall have passed a satisfactory examination before the State Board of Pharmacy.

Sec. 3. The State Board of Pharmacy shall consist of seven persons, to be appointed by the Governor from the registered pharmacists of the state, and shall hold office for the term of three years and until their successors are appointed. The members of the Pharmaceutical Board of the State, appointed by the Governor pursuant to Chapter 856 of the Statutes, shall constitute, for the term for which they were appointed, the State Board of Pharmacy, within the meaning of this act. On the first of July, A.D. 1873, and in every third year thereafter, the Governor shall appoint the State Board of Pharmacy; and in case of vacancy at any time, arising from resignation, death, or removal from the state, the Governor shall have power to fill such vacancy from the registered pharmacists of the state. Four members of said Board shall constitute a quorum. Said Board shall organize by the election of a President and Secretary, both of whom shall sign all certificates and other official documents. Said Board shall meet twice a year, and shall have power to make by-laws and all necessary regulations for the proper fulfilment of their duties under this act. The secretary of said Board shall also be registrar of pharmacists. The duties of said Board shall be to examine all applicants for registration; to direct the registration by the registrar of all persons properly qualified or entitled thereto, and report annually to the General Assembly on the condition of pharmacy, together with the names of all registered pharmacists and assistant pharmacists. The duties of the registrar of pharmacists shall be to

keep a book in which shall be entered, under the supervision of the State Board of Pharmacy, the name and place of business of every person who shall apply for registration. It shall also be the duty of the registrar to duly note the fact against the name of any registered pharmacist, or assistant pharmacist, who may have died or removed from the state, or disposed of or relinquished his business, and to make all necessary alterations in the location of persons registered under this act.

Sec. 4. Every person applying for examination and registration under this act, shall pay to the State Board of Pharmacy, ten dollars, and on passing the examination required shall be furnished, free of expense, with a certificate of registration. Any registered assistant pharmacist may, with the consent of said Board, be entitled to registration as a registered pharmacist, and shall be furnished with a certificate of registration, for which certificate he shall pay the registrar one dollar. Every certificate issued by said Board shall be renewed annually, for which renewal one dollar shall be paid to the registrar. The fees received for examinations, registration, and certificates, under this act, shall be appropriated to defray the expenses of the State Board of Pharmacy.

Sec. 5. Any person, not a registered pharmacist, who shall, after the passage of this act, keep open shop for the retailing and dispensing of medicines and poisons, or who shall take, use, or exhibit the title of registered pharmacist, or any person who shall violate any of the provisions of this act, shall, upon the first conviction, be sentenced to pay a fine of fifty dollars, and upon the second, and every subsequent conviction, shall be sentenced to pay a fine of one hundred dollars; and all fines recovered under this act shall inure one-half to the state, and one-half to the complainant; *provided, however*, that in towns or parts of towns where there is no registered pharmacist within three miles, it may be lawful for any person to sell the usual domestic medicines put up by a registered pharmacist, and marked with his label, such person procuring annually a certificate from the State Board of Pharmacy, and paying one dollar for such annual certificate.

Sec. 6. Nothing hereinbefore contained in this act shall ap-

ply to any practitioner of medicine who does not keep open shop for the retailing, dispensing, or compounding of medicines or poisons, nor prevent him from administering or supplying to his patients such articles as he may deem fit and proper; nor shall it interfere with the making and dealing in proprietary medicines (popularly called patent medicines), unless such medicines be wholly or in part composed of some of the articles enumerated in Schedule A, of this act; nor with the business of wholesale dealers in supplying medicines and poisons to registered pharmacists and physicians and for use in the arts.

SEC. 7. No person shall hereafter sell, either by wholesale or retail, except for exportation, any of the poisons enumerated in Schedule A of this act, without distinctly labelling the bottle, box, vessel, or paper, and wrapper or cover in which said poison is contained, with the name of the article, the word POISON, and the name and place of business of the seller; and every registered pharmacist selling or dispensing any of said poisons shall first enter in a book to be kept for that purpose only, and subject always to inspection by the State Board of Pharmacy, or any officer or agent thereof, or other proper authority, and to be preserved for at least five years, a record of the same in accordance with Schedule B of this act; *provided*, that if any of said poisons form a part of the ingredients of any medicine or medicines compounded in accordance with the written prescription of a medical practitioner, the same need not be labelled with the word poison; but all prescriptions, whether or not composed in part or wholly of any of said ingredients, shall be carefully kept by the pharmacist on a file or in a book for that purpose only, and numbered in the order in which they are received or dispensed, and every box, bottle, vial, vessel, or packet containing medicines so dispensed, shall be labelled with the name and place of business of the registered pharmacist so dispensing said medicine, and be numbered with a number corresponding with that on the original prescription retained by said pharmacist on his book or file as aforesaid. Said prescription shall be preserved at least five years, and shall be open to the inspection of the writer thereof, and a copy shall be furnished, free of expense, when demanded by either the writer or purchaser thereof.

SEC. 8. Any person who shall knowingly adulterate, or cause to be mixed, any foreign or inert substance with any drug or medicinal substance, or any compound medicinal preparation recognized by the Pharmacopœia of the United States or of other countries, as employed in medicinal practice, with the effect of weakening or destroying its medicinal power, or who shall sell the same, knowing it to be adulterated, shall, in addition to the penalties prescribed in Section 5 of this act, forfeit to the use of the state all articles so adulterated found in his possession, and be made incapable of practicing as a pharmacist in this state thereafter. When complaint shall be duly made of any violation of the provisions of this section, it shall be the duty of the State Board of Pharmacy, on being notified thereof, to make investigation of the same, employing competent persons, when necessary, to make analysis of the articles alleged to be adulterated; and if such complaint shall be substantiated, said Board shall assist in making prosecution against the respondent.

SEC. 9. Chapter 856 of the statutes, and all other acts and parts of acts inconsistent herewith, are hereby repealed.

SCHEDULE A.

Arsenic and its preparations; cotton root and its preparations; corrosive sublimate; cyanide of potassium; ergot and its preparations; hydrocyanic acid; opium and its preparations, paregoric excepted; oxalic acid; savine; strychnia; volatile oil of bitter almonds, of pennyroyal, of savine, and of tansy; proprietary or secret medicines, recommended, sold, or advertised as emmenagogues and parturients.

SCHEDULE B.

Form in which registered pharmacists and retail dealers in poisons shall keep their poison-book.

Date.	Name of Purchaser.	Name and quantity of Poisons sold.	For what purpose said to be required.	Remarks.

II. PROVINCE OF ONTARIO, DOMINION OF CANADA.

The Pharmacy Act of 1871.

(Assented to 15th February, 1871.)

Whereas it is expedient, for the safety of the public, that persons engaged in the sale of dangerous, poisonous, and medicinal substances, should be acquainted with their nature and uses; Therefore, Her Majesty, by and with the advice and consent of the Legislative Assembly of the Province of Ontario, enacts as follows:

1. From and after the first day of July, in the year of our Lord one thousand eight hundred and seventy-one, it shall be unlawful for any person to sell or keep open shop for retailing, dispensing, or compounding poisons, or to sell or attempt to sell any of the articles mentioned in Schedule A of this act, or to assume or use the title "chemist and druggist," or "chemist," or "druggist," or "pharmacist or apothecary," or "dispensing chemist or druggist," in any part of the Province of Ontario, unless such person shall be registered under this act, nor unless such person has taken out a certificate under the provisions of section twenty-one of this act, for the time during which he is selling, or keeping open shop for retailing, dispensing, or compounding poisons, or assuming or using such title.

2. The several articles named or described in Schedule A, shall be deemed to be poisons within the meaning of this act, and the Council of the Ontario College of Pharmacy hereinafter mentioned, may, from time to time, by resolution, declare that any article in such resolution named, ought to be deemed poison within the meaning of this act, and thereupon the said Society shall submit the same for the approval of the Lieutenant-Governor in Council, and if such approval shall be given, then such resolution and approval shall be advertised in the *Ontario Gazette*, and on the expiration of one month from such advertisement, the article named in such resolution shall be deemed to be a poison within the meaning of this act, and the same

shall be subject to the provisions of this act, or such of them as may be directed by the Lieutenant-Governor in Council.

3. It shall be unlawful to sell any poison named in the first part of Schedule A, either by wholesale or retail, unless the box, bottle, vessel, wrapper, or cover, in which such poison is contained, be distinctly labelled with the name of the article and the word "poison," and if sold by retail, then also with the name and address of the proprietor of the establishment in which such poison is sold; and it shall be unlawful to sell any poison mentioned in the first part of Schedule A, to any person unknown to the seller, unless introduced by some person known to the seller; and on every sale of any such article, the person actually selling the same shall, before delivery, make an entry in a book to be kept for that purpose, in the form set forth in Schedule B, to this act, stating the date of the sale, the name and address of the purchaser, the name and quantity of the article sold, the purpose for which it is stated by the purchaser to be required, and the name of the person, if any, who introduced him, to which entry the signature of the purchaser shall be affixed.

4. For the purpose of more effectually carrying out the objects of this act, it shall be lawful for the persons at the time of the passing of this act, engaged as principals or assistants in the business of an apothecary, or chemist and druggist, and those persons who shall have carried on business as an apothecary, or chemist or druggist, for a period of three years before the passing of this act, in the Province of Ontario, to form themselves into a society to be called "The Ontario College of Pharmacy," and every person so engaged in business on his own account, and every person who, at the time of the passing of this act, has served an apprenticeship of three years, and has acted as druggist's assistant for one year, shall, upon payment of a fee of four dollars to the treasurer of the said Society, be entitled to be enrolled as a member of the said Society, and every person so engaged as a clerk, assistant, or apprentice, on payment of a fee of two dollars, shall be entitled to be enrolled as an associate of the said College.

5. Any associate may, upon passing such an examination as

may be prescribed by the Council, be admitted and enrolled as a member of the said Council.

6. William Elliot, Hugh Miller, George Hodgetts, and W. H. Dunspaugh, of the city of Toronto; John W. Bickle, John Winer, and A. Hamilton, of the city of Hamilton; B. A. Mitchell, and William Saunders, of the city of London; E. H. Parker, of the city of Kingston; John Brown and John Roberts, of the city of Ottawa; S. J. Parker, of the town of Owen Sound; James Mills, of the town of St. Catharines; J. Hawkes, of the town of Cornwall; F. Brendon, of the town of Brantford; F. Jordan, of the town of Goderich; C. Stork, of the town of Brampton; C. Brent, of the town of Port Hope; E. Gregory, of the town of Lindsay; A. W. Kempt, of the town of Peterborough; and Henry John Rose, of the city of Toronto; Thomas Matchett, of Omemee, in the County of Victoria, and James Clements Holden, of the town of Belleville; and such other persons as may become members or associates of the said College under the provisions of this act, shall be, and are hereby, constituted a body politic and corporate under the name of "The Ontario College of Pharmacy."

7. Until other persons be elected, as hereinafter provided, the persons first hereinbefore named shall be the Council or Board of Directors of the said Society, and shall act as a Board to grant certificates of competency to conduct the business of a chemist and druggist, and to be registered under this act; and the said Henry John Rose shall be Provisional Registrar of said Society. The first meeting of said Council shall be held on the first Wednesday in July, one thousand eight hundred and seventy-one, at the city of Toronto, at such time and place as the Provisional Registrar and any two of the above-named persons may fix, and of which notice shall be given for at least four weeks prior thereto in the *Ontario Gazette*.

8. The said Pharmaceutical Council to be elected as hereinafter mentioned, shall consist of thirteen members, who shall hold office for two years. Any member of said Council may, at any time, resign by letter directed to the Registrar of said College; and in the event of any vacancy occurring, the remaining

members of the Council shall fill up such vacancy from the members of the College.

9. The first election shall take place on the first Wednesday in October, in the year of our Lord one thousand eight hundred and seventy-one, at such place as shall be fixed by resolution of the said Provisional Council; and the Registrar to be appointed by the said Council shall act as Returning Officer at the said election, and the persons entitled to vote at such first election shall be all persons who are at the time of the passing of this act engaged as chemists and druggists on their own account or in partnership with any other person in the Province of Ontario.

10. Every subsequent election shall be held on the first Wednesday in July in every second year, and the persons qualified to vote at such election shall be such persons as are members of the said Society.

11. The said Council shall, at their first meeting, elect from themselves a President and Vice-President, and shall appoint a Registrar and such other officers as the said Council may consider necessary.

12. The said Council shall hold at least two sittings in every year, on the first Wednesday in February and first Wednesday in August, for the purpose of granting certificates of competency, at such places as they may by resolution appoint, of which due notice shall be given for at least one month in the *Ontario Gazette*, and at least two papers in the city of Toronto.

13. Every person desirous of being examined touching his qualifications to act as a chemist and druggist, shall, at least two weeks before the sittings of the said Council, pay into the hands of the Registrar the required fees, not exceeding four dollars, together with a notice of his intention to present himself for such examination.

14. Any person having passed such examination to the satisfaction of the majority of the examiners, shall be entered upon the roll of registered chemists and druggists, and shall become a member of the College; such examinations may be conducted by the members of the Council, or by persons appointed by them.

15. It shall be the duty of the Registrar to make and keep a

correct register, in accordance with the provisions of this act, as shown in Schedule C, of all persons who shall be entitled to be registered under this act, and to enter opposite the names of all registered persons who shall have died, a statement of such fact, and from time to time to make the necessary alterations in the addresses of persons registered under this act, and shall cause to be printed and published on or before the fifteenth day of June of each year, an alphabetical list of the members who were on the first day of June of that year entitled to keep open shop as pharmaceutical chemists.

16. No names shall be entered in the register except of persons authorized by this act to be registered, nor unless the Registrar be satisfied by proper evidence that the person claiming is entitled to be registered; and any appeal from the decision of the Registrar may be decided by the Council of the said College, and any entry which shall be proved to the satisfaction of such Council to have been fraudulently or incorrectly made, may be erased from or amended in the said register by order of such Council.

17. All persons who at the time of the passing of this act were in business as chemists and druggists, or chemists, druggists or apothecaries, upon their own account or in partnership with any other person, or who have served an apprenticeship of three years and have acted as a druggist's assistant for one year, shall be entitled to be registered under this act, upon production to the Registrar of such evidence of their having been so engaged as the Council of the said College may require, and upon payment of a registration fee of four dollars; but in case any person has paid the fee of four dollars mentioned in the fourth section, the same shall be credited to him as his registration fee; and there shall be payable to the Registrar of the said College, for the uses of the College, on the first day of May of each year, by every person registered and carrying on business as a pharmaceutical chemist, the sum of four dollars.

18. The Ontario College of Pharmacy shall have power to acquire and hold real estate, not exceeding at any time in annual value five thousand dollars, and the same, or any part thereof, may alienate, exchange, mortgage, lease, or otherwise

charge or dispose of, as occasion may require, and may erect buildings for the purpose of accommodating lecturers on chemistry or pharmacy, or for a library, pharmaceutical museum, or specimen-room for the use of the members and associates of said College; and all fees payable under this act shall belong to the said College for the purpose of this act.

19. The Council of the said Society shall, subject to the supervision and disallowance thereof by the Lieutenant-Governor in Council, have authority to prescribe the subjects upon which candidates for certificates of competency shall be examined, to establish a scale of fees, not to exceed four dollars, to be paid by associates of the said College and other persons applying for examination; and to make by-laws, rules and orders for the regulation of their own meetings and proceedings and those of the College; and for the admission of druggists' assistants and apprentices as associates of the said Society; and for the remuneration and appointment of examiners and officers of the said College; and for the payment of the actual expenses of the members of the said Council in attending its sittings, or in attending upon the business of the said Society; and in respect to any other matters which may be requisite for the carrying out of this Act.

20. Any person registered under this Act, and no other, shall be entitled to be called a "Pharmaceutical Chemist;" and no other person except a pharmaceutical chemist as aforesaid, or his employee or employees, shall be authorized to compound prescriptions of legally authorized medical practitioners; but no person shall be entitled to any of the privileges of a pharmaceutical chemist, or member of the said Society, who is in default in respect to any fees payable by him by virtue of this act.

21. Upon any person being registered under this act, he shall be entitled to receive a certificate in the form in Schedule D, or the like effect, under the corporate seal of the said Society, and signed by the Registrar, and shall be entitled to receive a similar certificate annually upon payment of the said fee of four dollars.

22. Every pharmaceutical chemist carrying on business on

his own account, shall display his certificate in a conspicuous position in his place of business.

23. No person shall wilfully or knowingly sell any article under the pretence that it is a particular drug or medicine which it is not in fact, and any person so doing (beside any other penalties to which he may be liable) shall be subject to the penalties prescribed by the twenty-fifth section of this act.

24. All compounds named in the British Pharmacopœia shall be prepared according to the formula directed in the latest edition published "by authority," unless the College of Physicians and Surgeons of this Province shall select another standard, or unless the label distinctly shows that the compound is prepared according to another formula.

25. Any person transgressing any of the provisions of this act, or selling any poison in violation thereof, shall for the first offence, incur a penalty not exceeding twenty dollars and costs of prosecution, and for each offence committed subsequent to such conviction, a penalty not exceeding fifty dollars and costs of prosecution, to be recovered in a summary manner before any two Justices of the Peace or Police Magistrate on the oath of one or more credible witnesses, one moiety to belong to the prosecutor and the other to Her Majesty for the public uses of this Province; *Provided always*, that there may be an appeal under the Summary Convictions Act of Upper Canada.

26. In any prosecution under this Act, it shall be incumbent upon the defendant to prove that he is entitled to sell or keep open shop for compounding medicines or retailing poisons, and to assume the title of chemist and druggist or other title mentioned in section one of this act; and the production of a certificate purporting to be under the hand of the Registrar and under the seal of the said Society, showing that he is so entitled, shall be *prima facie* evidence that he is so entitled.

27. No person selling articles in violation of the provisions of this act shall recover any charges in respect thereof in any court of law or equity.

28. Nothing in this act contained shall extend to or interfere with the privileges conferred upon physicians and surgeons by any of the acts relating to the practice of medicine and surgery

in this Province, and they may be registered as pharmaceutical chemists, without undergoing the examination; nor shall it prevent any person whatsoever from selling goods of any kind to any person legally authorized to carry on the business of an apothecary, chemist, or druggist, or the profession of a doctor of medicine, physician, or surgeon, nor veterinary surgeons, or to prevent the members of such profession supplying to their patients such medicine as they may require, nor with the business of wholesale dealers in poisons, or other articles in the ordinary course of wholesale dealing; and upon the decease of any person legally authorized, and actually carrying on the business of chemist and druggist at the time of his death, it shall be lawful for the executor, administrator, or trustee of the estate of such person to continue such business, if, and so long only as such business shall be *bona fide* conducted by a pharmaceutical chemist registered under this act; *provided always*, that nothing in this act shall prevent any member of the College of Physicians and Surgeons of Ontario from engaging in and carrying on the business of an apothecary, chemist, or druggist without registration under the provisions of this act.

29. Upon a resolution of the Council of the said Society being passed, declaring that any person in consequence of his conviction for any offence or offences against this act is, in the opinion of the Council, unfit to be on the register under this act, the Lieutenant-Governor in Council may direct that the name of such person shall be erased from such register, and it shall be the duty of the Registrar to erase the same accordingly.

30. Chapter ninety-eighth of the Consolidated Statutes of Canada is hereby repealed, so far as the Province of Ontario is concerned.

31. This act may be cited as "the Pharmacy Act of 1871."

SCHEDULE A.

PART I.

Acid, Hydrocyanic (Prussic); Aconite and compounds thereof; Antimony, Tartrate of; Arsenic, and the compounds thereof; Atropine; Conia, and the compounds thereof; Corrosive Sublimate; Digitaline; Ergot; Hemp, Indian; Morphia, and its Salts and Solutions; Oil, Cedar; Strychnine, and Nux Vomica; Savine, and preparations of; Veratria.

PART II.

Acid, Oxalic; Belladonna, and the compounds thereof; Beans, Calabar; Cantharides; Chloral Hydrate; Chloroform and Ether; Conium, and the preparations thereof; Croton Oil and Seeds; Cyanide of Potassium; Euphorbium; Elaterium; Goulard Extract; Hyoscyamus, and preparations; Hellebore; Iodine; Opium, with its preparations, including Laudanum, &c., but not Paregoric; Pink Root; Podophyllin; Potassium, Iodide of; Potassium, Bromide of; St. Ignatius Beans; Santonine; Scammony; Stramonium, and preparations; Valerian; Verdigris; Zinc, Sulphate of.

SCHEDULE B.

Date.	Name of Purchaser.	Name and quantity of Poison sold.	Purpose for which it is required.	Signature of purchaser.	Address of purchaser.	Name of person introducing purchaser

SCHEDULE C.

Name.	Residence.	Qualification.	Remarks.
A. B.	Kingston.	In business prior to Pharmacy Act.	Dead.
C. D.	Hamilton.	Examined and certified, 12th July, 1871.	Erased by order of Lt. Gov., dated 14th Oct., 1879.
E. F.	London.	Served apprenticeship and as assistant.	

SCHEDULE D.

I hereby certify that *C. D.*, having first passed the examination prescribed by the Pharmaceutical Council (or having been in business, or was qualified assistant prior to the Pharmacy Act of 1871, as the case may be), was on the day of duly registered as a pharmaceutical chemist, and is authorized to carry on the business of chemist and druggist in the Province of Ontario, from the day of A.D. 18 to the day of A.D. 18

(Signed) E. F.,

[Corporate Seal.] Registrar of the Pharmaceutical Society.

III. STATE OF NEW YORK.

An Act to establish a Board for the examination of and licensing Druggists and Prescription Clerks in the city of New York. Passed March 28th, 1871.

The people of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. The Mayor of the city of New York is hereby authorized to appoint, within ninety days after the passage of this act, a Board, to consist of one skilled pharmaceutist, one practical druggist, and two regular physicians of the city of New York, to hold office during the pleasure of said mayor, to act as an Examining Board, for the examination and licensing of all druggists and persons now employed, or hereafter to be employed as clerks by any druggist, keeper, proprietor, or superintendent of any drug store in said city, who shall be engaged in preparing and putting up physicians' prescriptions, or dispensing medicine. On and after six months from the date of the organization of such Board, any person who shall not have passed an examination before, and received a certificate from said Board, who shall make up, or attempt to make up any physicians' prescription, shall be deemed guilty of a misdemeanor, and shall, upon conviction therefor, be fined not more than five hundred dollars, or imprisoned not longer than six months, or both, at the discretion of the court.

SEC. 2. In case of a vacancy occurring by reason of the refusal of any person appointed as a member or officer of said Examining Board, or if after accepting he shall die, resign, or otherwise become incapacitated to act, the said mayor shall fill such vacancy by the appointment of some other physician, chemist, or druggist, to act as a member of said Board.

SEC. 3. The persons appointed as such Examining Board shall, within ten days after receiving notice of such appointment, meet and organize as such Board, a majority of whom shall constitute a quorum for the transaction of business, and they shall appoint a person who shall be a practical druggist, as secretary of said Board.

SEC. 4. It shall be the duty of said Board to examine, on application, all persons now employed, or hereafter to be employed in putting up prescriptions or dispensing medicine in the city of New York, and give a certificate of such examination to the person so examined if found competent to act in such capacity, and which certificate shall be deemed as a license for such person to engage in such employment.

SEC. 5. Said Board shall, with the approval of the mayor, fix the sum to be paid for such certificates by the persons to whom they shall be issued, and all sums or fees for certificates raised by said Board shall be appropriated to the payment of the expenses and salaries of the members of said Board, or so much thereof as may be necessary, the balance, if any, to be paid into the city treasury; said Board shall cause a true and accurate account of its receipts and disbursements to be kept, and shall once in three months make a return of the amount received and expended to the Comptroller of the city of New York.

SEC. 6. The Board of Supervisors of the city and county of New York are hereby directed to fix the compensation which each member of said Board and the secretary thereof shall receive, as they may deem reasonable for the services rendered by them, not to exceed the sum of twenty-five hundred dollars per annum for each commissioner, and for the secretary; said Board of Supervisors shall also raise annually by tax on the estates, real and personal, in the city of New York, such sum of money as may be necessary to pay any balance for expenses and salaries of said Examining Board which shall exist after the application as above provided, of the sum or sums of money received for the certificates issued by said first-mentioned Board.

SEC. 7. This act shall take effect immediately.

IV. STATE OF VIRGINIA.

Session, 1870–1871.

Sale of Poisons: "That every apothecary, druggist, merchant, or any other person who sells or delivers any strychnine, arsenic, corrosive sublimate, or prussic acid, shall have the words 'poison,' written or printed on the label thereof, and

shall note in a book, to be kept by such persons for that purpose, to whom such poison was sold or delivered, the date of delivery, and the kind and amount of such poison so delivered, and shall keep such book open for inspection. That any person violating the provisions of this act shall, on conviction, be fined not less than twenty, nor more than one hundred dollars; *provided*, that the provisions of this act shall not apply to the prescriptions of regular practicing physicians."

REPORT OF THE COMMITTEE ON EXHIBITION.

The pharmaceutic exhibitions, attending the meetings of the Association, increase in importance and value from year to year. The interest manifested in them is no longer local; it extends in late years, even across the ocean, and at the exhibition attending our Nineteenth Annual Meeting, Europe was represented quite extensively, both direct and indirect.

CRUDE DRUGS.

McKesson & Robbins, of New York, deserve special notice for their exceedingly handsome collection of roots in illustration of materia medica. Messrs. McKesson & Robbins have for several years exhibited in this way, selecting each year some other subject, and have made their exhibition of lasting value by donating their collection to some college of pharmacy. Their display this year embraced among about one hundred and twenty-five specimens—all handsome and carefully selected—many that are of rare occurrence and seldom known except by name. We mention among them Asarabacca root (Asarum Europæum), popular in Russia as a cure for habitual intoxication; Allerman's root (Allium Victorialis); Cahinca root (Chiococca racemosa), reputed to be a cure for the bite of venomous serpents; China root (Smilax China), a native of China and Japan, possessing similar properties to sarsaparilla; Mechoacan root (convolvulus Mechoacana), known in Europe as American

bryony, and used to falsify jalap; Masterwort root (Imperatoria ostruthium); Iwarancusa root (Anatherum muricatum); the various commercial forms of rhubarb; true and false jalap; Honduras, Jamaica, and Vera Cruz sarsaparilla; along with the false, wild or American sarsaparilla (Aralia nudicaulis); African, Cochin, and Jamaica ginger, both bleached and unbleached; and many others of interest, too numerous to note here.

Herring & Co., of London, England, exhibited select specimens of East India rhubarb; belladonna, hyoscyamus, conium, and digitalis leaves; very handsome scammony roots and scammony resin.

Richardson & Co., of St. Louis, Mo., displayed a very select collection in gallon jars, embracing gum arabic, gum tragacanth, red bark (quills), Calisaya bark (quills), calamus root, cantharides (very fine), cardamom seed, cochineal (very handsome, silver-gray Honduras), American saffron, cassia buds and grains of Paradise.

W. H. Crawford, of St. Louis, Mo., representing *Mr. F. Kalteyer*, San Antonio, Texas. Handsome specimens of Mezquite gum and fruit.

B. O. & G. Wilson, of Boston, Mass. The display of indigenous pressed and loose herbs deserves special comment, as their collection is certainly superior in quality and appearance to any usually found in our markets; and their more general introduction would seem to fill a want long felt. Their collection comprised among many others, goldthread, mullein, horehound, boneset, pipsissewa, elder flowers, catnip, pennyroyal, &c., which, like their entire display, were unexceptionable. In marked contrast to these

Mr. Joseph Harrop, of Leavenworth, Kansas, exhibited a collection of pressed herbs, obtained indiscriminately at various stores, and comprising samples of the products of most of the herbalists of the United States, which showed conclusively that the latter are frequently of quality totally unsuitable for pharmaceutic purposes.

POWDERED DRUGS.

The Enno Sander Chemical Co., of St. Louis, Mo., exhibited a fine collection of pure powdered drugs, neatly put up in one-pound tin cans with screw tops—a form of package both convenient and practical, as their contents are thus effectually excluded from the influence of light, and are in a great measure protected from the influence of the air.

Meyer & Bro., of St. Louis, Mo., also displayed a handsome collection of powdered drugs, put up in pint glass stoppered bottles.

J. L. Lemberger, of Lebanon, Pa., exhibited powdered and whole wild cherry bark, collected during each month for two years, in illustration of his paper on Wild Cherry Bark.

In this connection we must not omit to mention the display of *Dr. T. F. Allen's* (of New York), Medical Herbarium, part 2, containing ten specimens of medicinal plants, carefully dried, pressed, and mounted. It was donated to the St. Louis College of Pharmacy.

ESSENTIAL OILS.

The exhibition of essential oils was exceedingly large and interesting. Foremost among them must be mentioned the collection of

Messrs. Sachse & Co., of Leipzig, Saxony, represented by their travelling agent, *Mr. Louis Voigt.* This collection embraced many very rare oils, and all of them of superior quality. Among them we mention the oils of juniper berries, German aniseed, coriander, caraway, chamomile (both Roman and German), ginger, rue, marjoram, and parsley, and the crystallized oils of peppermint and thyme, the latter used during the late war in German hospitals for medicinal and disinfectant purposes with the very best success.

Heine & Co., of Leipzig, Saxony, exhibited also a very handsome and valuable collection of essential oils, and fruit ethers, comprising seventeen samples, all of them of the very best quality.

Richardson & Co., of St. Louis, and *Meyer & Bro.*, of St. Louis, also exhibited extensive collections of essential oils, among which many of superior quality.

Brückner, Lampe & Co., of Leipzig, Saxony, also made a creditable display, and

Mr. C. W. Jones, of Centreville, Mich., displayed large quantities of oil of peppermint, and of erigeron, of his own production.

CHEMICALS.

The display in this line was truly magnificent, and it is difficult to say which of the numerous exhibitors deserved the most credit.

Foremost we mention samples of crude chemical products from the Stassfurt mines, exhibited by

Vorster & Grüneberg, of Cologne and Stassfurt, consisting of magnesium, potassium, and sodium compounds.

Powers & Weightman, of Philadelphia, Pa., were represented by one hundred and seven specimens, among which one lump of beautifully crystallized alum weighing six hundred pounds, and enormous jars of the sulphates of quinia and morphia, valued at $1350. Apart from these monster displays, we note very handsome sulphate of quinidia, crystallized strychnia, nitrate of silver, corrosive sublimate, caffeina, and its citrate, proto- and biniodide of mercury, oxalate of ammonia, crystallized nitrate of ammonia, scaled preparations of iron, purified acetate of lead, &c.

Chas. T. White & Co., of New York. An exceedingly handsome collection, among which the exhibition of sulphate of quinia, as one of their regular manufactures, is especially noteworthy. Their display, embracing thirty-six leading articles, was characterized by the handsome appearance both of the packages and their contents, and it seems evident that this firm strives honestly to furnish the trade with chemicals of the purest quality. We note oxide of zinc U. S. P., made as required by precipitation, and not by ignition, the usual method of obtain-

ing the white article of commerce; acetic acid perfectly pure, for medicinal use; the iodides and bromides of potassium, sulphate of morphia, crystallized and powdered strychnia, scaled ammonio-citrate of bismuth, &c.

Rosengarten & Sons, of Philadelphia, are represented by one hundred and ten specimens, many of them very rare, and all handsome and creditable in quality. We note the lactate, tannate, iodide, acetate, citrate, ferrocyanide, muriate, hypophosphites, and sulphate of quinia; the hypophosphites of iron, lime, soda, potassa, and ammonia; the bromides of lithium, zinc, magnesium, sodium, cadmium, ammonium, and potassium; the acetate, nitrate, sulphate, muriate, and crystallized strychnia; the acetate, valerianate, muriate, and sulphate of morphia; tannic acid; crystallized, granular and fused nitrate of ammonia of specially handsome quality, &c.

Henry Bower, of Philadelphia, exhibited in this connection, handsome samples of his well-known pure glycerin.

G. Malinckrodt & Co., of St. Louis, were represented by three hundred specimens of chemicals, many of them exceedingly handsome, and all of them apparently of standard commercial quality. We note chromic, gallic, pyrogallic, and hypophosphorous acids; arseniate, benzoate, nitrate, and oxalate of ammonia; tartar emetic; ammonio-citrate, oxychloride, and other bismuth compounds; the iodide, bromide, and sulphate of cadmium; chloroform, ether; the hypophosphites of ammonia, lime, iron, potassa, and soda; iodoform; very handsome scaled preparations; proto- and biniodide, oxide, and subsulphate of mercury; very handsome bromide and iodide of potassium; permanganate of potassa; Rochelle salt; the sulpho-carbolates of soda, potassa, ammonia, and zinc, &c.

The Enno Sander Chemical Co., of St. Louis, exhibited quite a line of handsome chemicals, foremost among which we note the carbonate and black oxide of copper, tannate of lead, chlorate of soda, scaled preparations, alumina, and its sulphate and nitrate, pure chloroform, acetic and butyric ether, sulphate of nickel, chromic acid, purified nitrate of potassa and muriate

of ammonia, phosphate of manganese, chloride of zinc, neutral chromate of potassa, &c.

F. C. Calvert & Co., of London, Eng., exhibited their various grades of carbolic acid.

Tilden & Co., of New Lebanon, N. Y., displayed a large and creditable collection, among which tannate of iron, the valerianates of ammonia, strychnia, quinia, and zinc; oxychloride, tannate, and subcarbonate of bismuth; chlorate of quinia, carbonate of lithia, the permanganate of soda and potassa, iodide of calcium, bromide of zinc, &c.

E. Schering, of Berlin, Prussia, represented by *Schering & Glatz*, of New York. A handsome collection of rare chemicals, among which we note peroxide of barium, tungstic acid, carbonate of lithia, resublimed naphthaline, bromal hydrate, chloral hydrate, papyroxyle, nitrate uranium, chloride of æthylidene, &c.

Morgan & Sons, of London, Eng., represented by *Theo. Metcalf & Co.*, of Boston. A handsome variety of rare chemicals. We note bromide of mercury, papaverina, chloride of sulphur, apiol, nitrite of amyl, bimeconate of morphia, proteine, pancreatine, &c.

E. Scheffer, of Louisville, Ky. Handsome specimens of liquid, saccharated, and purified pepsin, the latter capable of dissolving 2000 times its weight of coagulated albumen.

PHARMACEUTICALS.

Theodore Metcalf & Co., of Boston, exhibited very handsome samples of officinal and non-officinal fluid extracts, which seemed of excellent quality. Among other pharmaceuticals we note various medicinal syrups and solutions of very handsome quality. Also, cologne and lavender waters, tooth powders, and Kent's nipple shield, &c.

W. H. Crawford, of St. Louis, was represented by a very handsome collection of pharmaceuticals, among which fluid extracts, made by Campbell's process, medicated syrups, wines,

elixirs, effervescing granular salts, solutions, &c. He also exhibited *Hawley's* preparations of pepsin and pancreatine, and the extract of meat of the Liebig Company, of Fray Bentos, Uruguay, and London, England. Mr. Crawford's display was exceedingly creditable, and attracted considerable attention.

W. J. M. Gordon, of Cincinnati, exhibited a handsome variety of excellent fluid extracts, and beautiful samples of podophyllin, muriate and sulphate of hydrastine (berberina), and his inodorous glycerin.

Burrough Brothers, of Baltimore, exhibited a fine collection of their fluid extracts, made according to their improved process. These fluid extracts were of unexceptionable appearance, and seemed to be of excellent quality. Their improvement consists in the use of an apparatus of their invention, in which hot water is caused to circulate around the still, and they claim to be enabled so to regulate the temperature, that the temperature of the medicinal liquid never rises above that prescribed by the Pharmacopœia, or that desirable by the operator.

M. W. Alexander, of St. Louis, exhibited the extract of meat of *A. Benites & Co.*, of Buenos Ayres, and granular effervescing salts of *Alfred Bishop & Co.*, of London.

Henry Thayer & Co., of Cambridgeport, Mass., displayed a large and handsome variety of their fluid extracts and sugar-coated pills. The pills in appearance could compete with any on exhibition.

McKesson & Robbins, of New York, exhibited their gelatine-coated pills, which are very handsome and uniform in appearance, and we are assured are very readily soluble in the juices of the stomach, in which event they deserve a high place among pharmaceuticals.

Hance Brothers & White, made their usual handsome display of their leading preparations, among which fluid extracts, fruit juices, lozenges, blue mass, &c.

Tilden & Co., of New Lebanon, N. Y., exhibited in addition to the chemicals above mentioned, their fluid extracts, sugar-

coated pills and granules, their copyrighted elixirs, and other preparations of a similar character. Also, bromo-chloralum, a disinfectant, of which they are the only manufacturers.

Bullock & Crenshaw, of Philadelphia, made a magnificent display of sugar-coated pills and granules, comprising over two hundred varieties. The reputation which this house enjoys throughout the country offers a sufficient guarantee of the quality of this class of preparations, which externally leave nothing to be desired.

Jas. R. Mercein, of Jersey City, N. J., exhibited quite a creditable collection of sugar-coated pills, prepared by him on a small scale for his retail trade. These pills compare in appearance very favorably with the sugar-coated pills of other houses on exhibition, and if it is considered that they are made in a small way, Mr. M. deserves the highest credit for his results. If we were in possession of a working process for making sugar-coated pills on a small scale, so that each pharmacist could make acceptable sugar-coated pills on a scale justifiable for his trade, not only the pharmacist, but frequently also the patient would be benefited.

O. W. Heyer, of St. Louis, exhibited medicated gelatine tablets of various kinds. They are united in the form of thin sheets marked off into squares, representing the minimum dose of the medicinal substance. They are not liable to become popular among druggists, and may only become popular with those physicians who are in the habit of carrying a whole Materia Medica in their vest pockets.

Theo. Cooper & Co., of Philadelphia, exhibited a small but handsome collection of fluid extracts made by Spencer Thomas's method of cold expression.

Herring & Co., of London, exhibited in addition to the crude drugs above mentioned, expressed narcotic juices, granular effervescent preparations, &c.

W. R. Warner & Co., of Philadelphia. Your committee have been informed that Messrs. Warner & Co. had sent an extensive collection of sugar-coated pills, which for some, at the

time, unexplained reason, failed to arrive in time for the meeting. This is to be regretted, as the pills of this firm are very popular, and would have made a handsome addition to the exhibition.

Joseph Willard, of Boston, exhibited very handsome isinglass and other plasters.

W. E. Harrington, of St. Louis. Dr. Ridges's patent cooked food for infants, manufactured by Woolbridge & Co., of Malden, Mass.

Chas. J. Herman & Co., of St. Louis. Beautiful, and to all appearance excellent can wax.

J. L. Lemberger, of Lebanon, Pa. A very superior article of oil paste blacking.

PERFUMERY AND TOILET ARTICLES.

Dimmit, Hale & Co., of St. Louis, were the only large exhibitors in this line, but their display was very complete, and attracted considerable attention. Several of the above-mentioned exhibitors displayed colognes and toilet waters of various kinds, sachet powders, &c.

PAINTS, OILS, ETC.

The Mississippi Valley Oil Works, of St. Louis. Lard, lubricating and other oils, paints, &c.; white lead in its various stages of preparation.

E. S. Wheaton, of St. Louis, lubricating oils, &c.

H. H. Gillum, of St. Louis. Oils of various kinds and patent oil can, capacity forty gallons, for carbon oils.

G. Wolteman, of the Belleville Oil Works. Three very handsome samples of various grades of castor oil.

WINES, LIQUORS, ETC.

Koehler & Frohling, of San Francisco, Cal. Pure port, sherry, muscatels, and Angelica wines, of their vintage of 1866, white wine of 1868, and pure grape brandy. They add from

five to seven and ten per cent., of grape spirit to their pure juice wines, and guarantee them as to purity and quality.

Good & Roof, of New York (successors to Duryee & Good), exhibited very fine brandies, wines, bay rum, &c., which they import specially for the requirements of the drug trade.

S. W. Walton, of Cincinnati, exhibited very fine Kentucky sour mash (so-called Bourbon) whiskies, distilled by them at their distillery in Kentucky.

SHOP FURNITURE.

Campion Bros. & White, of Philadelphia, exhibited samples of their drug store fittings, including drawers with glass lettering, and several neat patterns of drawer pulls. Also glass labelled bottles, handsome show bottles of new styles, feeding bottles, graduated measures, &c. Their display was exceedingly fine.

F. Weissenberger, of St. Louis, exhibited glass labels for shop furniture, the lettering upon which was very fine, and deserves special notice, as comparing favorably with the best Eastern work of the kind.

APPARATUS, ETC.

Mr. H. D. Brady, of Newcastle-on-Tyne, England, exhibited a suppository mould, and a mould for soluble urethral bougies, in illustration of the remarks made by him upon the subject. They are devised by Mr. Brady, and manufactured of gun metal, electroplated, by Messrs. S. Maw, Son & Thompson, of London.

E. H. Sargent, of Chicago, had on exhibition several ingeniously designed wooden stands for test apparatus, of which we mention particularly a test-tube rack, so as to effectually close the tube rack when not in use, and thus to protect their contents from dust. Also a very handsome set of seidlitz powder measures, which seems to offer strong temptation to many, to dispense with the more accurate method of weighing.

Hance Bros. & White, of Philadelphia, in addition to their handsome exhibition of pharmaceuticals noted above, displayed

an improved mill, termed Hance's conical plate drug and spice mill, which seems to be well constructed for the purpose; also Hance's non-wasting, percolating, and filtering apparatus.

Theodore Kalb, of St. Louis, was represented by a magnificent collection of glass and other apparatus and appliances for pharmaceutic and analytical purposes, of which he makes a specialty. We note among the many, stands containing burettes and pipettes, universal retort holders, supports, Bunsen and other burners, blowpipes, condensers, flasks, Woulf's washing and other bottles, porcelain and other evaporating dishes, retorts and receivers, sp. gr. bottles, hydrometers of various kinds, apparatus for volumetric analysis, &c. The display would have been creditable to any of our Eastern importing houses, and is specially commendable as an indication of Western enterprise and progress.

F. Weissenberger, of St. Louis, exhibited the same line of wares, and while his display was not quite as extensive, it was very creditable, and included many of the above-mentioned items.

Prof. G. F. G. Markoe, of Boston, exhibited Toller's microscope, which seems to be an excellent instrument, and by the experience of Prof. M., is superior in every respect.

SODA WATER APPARATUS.

Lippincott & Co., of Philadelphia and St. Louis, displayed handsome Tennessee marble columned and hexagon soda apparatus, and a neat model of the same. Also, a fine variety of copper generators and fountains for making carbonic acid and mineral waters.

J. Matthews, of New York, had on exhibition his magnificent draught apparatus, "Frost King," made of Brocatelle marble, lined throughout with black Belgium marble. It has portable flint glass syrup holders, glass coolers, glass nozzles, pure Banca tin pipes, and connections lined with Banca tin, and it certainly seems, apart from its magnificent construction, to be a very desirable apparatus for dispensing pure carbonic acid water with

syrups. A desirable feature in this apparatus consists in the tumbler chambers, which are so arranged as to keep the tumblers cool and protected from dust. It is also provided with gas jets for illumination. The same firm exhibits, also, an elegant silver tumbler washer and Fisher's patent brush tumbler washer, an upright iron generator, with gas washer and pressure gauge, and packages of their salt mixtures for making artificial mineral waters.

A. Van Winkle, of Newark, New Jersey, exhibited a handsome model of his soda draught apparatus, which seems to be very happily constructed.

SURGICAL INSTRUMENTS AND APPLIANCES.

Codman & Shurtleff, of Boston, were represented by a splendid collection of surgical and other instruments. Among them we note, as of more special interest to druggists, a large assortment of atomizers and douches, syringes, stomach pumps, throat and ear tubes, together with many other instruments, chiefly interesting to the surgeon.

S. M. Leslie & Co., of St. Louis, also made a very handsome display of instruments, including many of the above-mentioned. Also, very handsome saddle-bags of a new pattern.

P. Bole & Co., of St. Louis, exhibited glass syringes and glassware in that line.

Penfield & Co., of Philadelphia, made a very handsome display of trusses and appliances of a similar character, in a large glass show case.

Finally, we mention the exhibition of a patent druggists' and pharmaceutic stove and still, made by *Robert B. Mitchell*, of Chicago. Of the stove, your committee have nothing to say, as they did not see it in operation, but they feel it incumbent upon them to make some remarks in regard to the still. In a circular freely distributed upon his table, Mr. M. warns *certain unprincipled persons* against infringement upon his still, the principle of which, he states, was secured to him by letters-patent in 1869, 1870, 1871. At the sixth session of the Association, Dr. Charles

O. Curtman, Professor of Chemistry in the Missouri Medical College; was invited to make some statement in regard to an *alleged unprincipled action on the part of R. B. Mitchell, of Chicago*, and by his statement then and there made he abundantly proved that he had exhibited a still identical in its principle with the above, of which, in fact, Mitchell's still seems to be an almost exact copy, at his lectures in the Missouri Medical College, in 1865–6. He also presented a reprint of a paper from the St. Louis Medical Record, of 1869, in which he explains by engravings and description the nature of his invention, and this paper, it seems, appeared in the same year in the American Journal of Pharmacy. It furthermore appears that Mr. Mitchell, in his circular, copies Dr. Curtman's description of his apparatus almost to the letter. Judging by this evidence, it seems to your committee that if there has been any *unprincipled action*, it has been on the part of Mr. Mitchell, and not by unprincipled persons at large. It is hoped that this properly presents Mr. Mitchell's claims.

With the display of wines and liquors at our Annual Exhibitions, an abuse has gained ground, of which serious complaint has been made among members at our last meeting. We allude to the indiscriminate *sampling* of these problematic medicines. From the very first hour of our meeting until the final adjournment, attendants at the various tables of this class of exhibitors waited upon the thirsty ones, in and out of the Association, that happened into the exhibition hall, and in fact made perfect barrooms of their stands. It is suggested by your committee that hereafter the Committee on Exhibition and the Local Secretary be instructed to inform this class of exhibitors that this is regarded by the Association an abuse, and to allow the sampling of their wares only during the official visit of the Association. At the same time your committee deem it justice to these exhibitors to state that some of its members have sampled their wares on sundry occasions with marked benefit, and that in the absence of instructions on the point they did not feel competent to exercise prohibitory measures.

There is a class of preparations usually exhibited that seem

to be inappropriate at our Annual Exhibitions. We allude to the preparations of a more or less proprietary character, such as elixirs, syrups, wines, &c., the formulæ for which are withheld from the general profession. The value of such preparations cannot be estimated by their appearance or taste, and as their composition is not known, no benefit can accrue to those for whom the Exhibition is intended. The tendency of the Association is to discourage the use of patent or proprietary medicines, and as a recognition of this class of preparations in a measure countenances the course of their manufacturer, their exhibition has a retrogressive instead of a progressive tendency, and should be discontinued.

In connection with the Exhibition, the very efficient services of Mr. Wm. H. Crawford cannot be over-estimated, and the vote of thanks tendered him by the Association was certainly well earned and but a small recompense for his very arduous labors. The arrangements in the exhibition hall were judicious and exceedingly tasty, and the selection of the locality a happy one. Every exhibitor was supplied with abundant space for his display, and yet every available space seemed to be fully appropriated.

C. Lewis Diehl, Chairman.
G. W. Kennedy,
J. F. Hancock.

REPORT OF THE COMMITTEE ON THE DRUG MARKET.

For the Fiscal Year ending June 30th, 1871.

The Committee on the Drug Market, appointed by the American Pharmaceutical Association at their last annual meeting, has to report that the members have had no opportunity for united action, and their chairman will therefore present a statement of the importations of the entire country, as well as the market changes of the city, which he is happy to represent. New York collects and dispatches most of the drugs for the use

of the United States, and St. Louis is destined to be the great medium for distribution through the Western country. New York stands second only to London in its controlling power over trade and commerce. Capital to-day wields a far greater influence over the world than military force ever did. It is but a few years since Napoleon, in the zenith of his power, contemptuously called the English a nation of shopkeepers; while a short time has proved that his power, founded upon arms, was but a shadow, which faded before the light that sprung from the influences of trade, aided by education. To supply the demands of trade, the telegraph wires cross both earth and sea, transmitting the shopman's orders. His money has built the railroads and steamers which bring to him goods from the opposite side of our globe in less time than would have been required, thirty years ago, to send a case of rhubarb from New York to St. Louis. During the past year our government, by allowing many articles to enter the country free of import, has burst some of the bonds that fettered the busy hands of commerce. This has caused a greater variation in the quotations of crude drugs than has been experienced for a number of years. (A comparative table of prices for reference is appended hereto.) We make the following extract from a price-list of one of the leading drug houses, issued last February: "During the last session of Congress, an elaborate tariff bill was prepared in concert with the manufacturing interest, by which foreign crudes were admitted to the free list, and the duty on manufactured articles was carefully adjusted; but somehow, when the bill was passed, manufactured goods were eliminated; and the result is, as an important example, that quinine, which was advanced to 45 per cent., when a duty of 20 per cent. was imposed upon cinchona bark for revenue purposes, still pays 45 per cent. in place of 30 per cent., as a proposed concomitant of admitting crude bark free. The dispensations of Congress are apt to be mysterious, but we regard the present amended tariff, with its more unjust discriminations in favor of a few manufacturers, as an improvement upon the old one. Out of 2880 dutiable headings of articles in the last tariff, 955 were comprised within the drug trade, and the import value of more than three-fourths of these articles

was always so limited, that the revenue derived did not pay the cost of collection. The free list has been much enlarged, our whole dutiable list has been simplified, and the relation of the drug business to the entire revenue of the country is better understood. We have paid the government for the past five years an annual revenue on imports of over eleven millions of dollars, while Hon. D. A. Wells, late Special Commissioner of Revenue, considers our proper proportion to be within one and one-half millions. For the future, our commodities which are limited in value, but multifold in variety and universal in use, will be less likely to be employed as they have been in the past, about almost every tariff bill that has come before the country, as wrappage, to conceal individual interests in particular articles. Sulphate of quinine, so important as a remedy against malaria in our new and more remote sections of country, is at present a monopoly in the hands of two manufacturers, and the price depends upon their pleasure."

We shall make mention in our subjoined remarks, of other articles that have been similarly affected by the new tariff.

The retail drug trade for the year, as far as we can learn, has been more profitable, owing to the lower cost of stock, but sales of various fancy goods have decreased. The wholesale business, for six months before our report opens, was extremely dull; the continually declining gold premium and the great uncertainty existing as to the action of Congress in regard to the tariff, caused buyers to be cautious, and transactions were generally made in a small way. This state of things greatly benefited the jobbing trade in the interior of the country, and the smaller jobbers on the coast suffered in the same ratio. Only importers who carried large and well-assorted stocks could induce buyers in the interior to send their orders so far from home.

The outbreak of war between France and Germany, in July, caused considerable commotion among merchants, and when they realized that the trouble was not to be soon settled, and serious disturbances would take place in consequence, speculation commenced. The products of these countries remaining on hand were bought up and prices advanced.

In the fall the blockade of the German ports proving inefficient, various shipments of German drugs began to arrive, and values settled to about former figures. The demand for goods which were to be affected by the new tariff was light, causing prices to fall until January 1st, when the new scale being established, buyers gained confidence and an active demand set in, continuing through the spring.

While the war lasted, the stock of manufacturers' chemicals increased, both here and in England, and values steadily declined; at the first prospects of peace the market strengthened, and although orders began to come in slowly, they increased later, and the advance continued up to the close of our report.

Oxalic acid, bichromate and prussiate potassa now command extreme rates; although articles of this class form a large portion of the wholesale druggist's stock, they have little interest for the retailer. We propose to report more especially upon the market for remedial agents.

It is to be regretted that there is no system, whereby any knowledge can be had of the amount of the product of drugs indigenous to this country. Roots, barks, and herbs are gathered over so vast a territory, and find a market in so many of our large cities, that the consumption cannot be correctly estimated. One of your committee, at the request of the chair, called upon several of the largest manufacturers to get information regarding the amount of production of certain chemicals which our druggists most largely deal in, but the secret was found to be too valuable to impart to the American Pharmaceutical Association. A new examiner of drugs has been appointed to the New York Custom House, and importers have in consequence been subjected to the usual annoyances, as the law regulating the tariff on drugs is in many cases ambiguous, and each new examiner causes some change to be made in the duties. For example: Liquor opii sed., has at different times been passed as a medicinal preparation at 20 per cent., as a proprietary article at 40 per cent., and recently $6.00 per pound, equivalent to 100 per cent., has been exacted, on the ground of its being a preparation of opium. Carbolic acid has been at various times entered at 40 per cent., 20 per cent., and 10 per cent.,

&c., &c. Below we give detailed reports upon the principal articles of consumption, showing the market changes for the fiscal year ending June 30th, 1871.

The importation and consumption of articles marked * are compiled from private memoranda, the official report of the U. S. Bureau of Statistics for 1871 not being completed.

Opium has fluctuated very much; the high prices realized for the previous crop caused the larger holders to make great efforts to maintain them, and, although it was generally anticipated that the yield would be large, contracts were made in Turkey at high figures for the first deliveries, which began to arrive nearly a month earlier than usual.

On the 1st of July, the stock of new opium in Smyrna consisted of one hundred and fifty-nine baskets, and sales were reported at P. 255 to P. 270; contracts for delivery in August and September, were made at P. 220, but resold soon after at an advance. The New York market opened stiff at $8.50,† but in August, most of the English and French bankers having withdrawn their credits with Smyrna houses, owing to the unsettled state of political affairs, exchange became very difficult to negotiate, and a complete unsettling of values occurred. Opium suddenly declined in Smyrna from P. 280 to P. 190 ($8.40 to $5.70), sales of the new crop being made here at $6.00, throwing a heavy loss upon the importers. This decline, however, was checked by the large holders purchasing small lots abroad at liberal prices which strengthened the market. About this time there came a large demand from Cuba, as the Spanish government proposed to increase the duty upon importations into the island, and the price commenced rising from $5.50, until in September, sales were made at $1.50 per pound advance.

During the next month, stocks increasing, it fell to $6.75, and notwithstanding the loss of the steamer "Rhone" with seventy-five cases on board, the decline continued.

At the end of December with a stock in bond, of about 38,600 pounds, it was selling at $6.38; although Smyrna quotations were P. 215 ($6.45.)

† Above quotations are gold, in bond.

In January, as all the dealers in the interior were out of stock, waiting to get the benefit of the reduction of $1.50 per pound in duty, an active demand set in, keeping the price firm until March, when some consignments arrived and were thrown on the market; the price fell rapidly to $5.00, afterward reacting to $5.25, but soon fell back again, declining more rapidly here than in Smyrna.

Early in April, sales were made of lots to arrive at $4.37 to $4.50, and from bonded store, $4.62 was asked; but in the latter part of the month, it declined to $4.25.

During May, opium touched the lowest prices of the year, $3.60 to $3.75, with quotations from Smyrna at P. 135 ($4.00), when one large dealer bought out the weakest holders, and the price was advanced fifty cents.

In June, the price was $4.50 and $4.62, closing strong, as telegrams from Smyrna reported a good inquiry at P. 160. This advance seems singular in face of a considerable stock of old opium (900 baskets), the new coming into market, and prospects of the largest yield ever known in Turkey, amounting probably to 7000 or 8000 baskets. The last crop was 4550 against 3150 baskets the season of 1869–70.

Entries at the custom-house for the year were 150,000 pounds* against 121,000 pounds last year. Prussian opium has been quite largely used by morphine manufacturers abroad, but has not been introduced here to any extent, and there has been some uncertainty as to whether it will pass our custom-house in future. England imported 450 cases during 1870, against 20 cases in 1869.

Quinine.—The consumption of this article has been about equal to the average, the Atlantic States using rather more, while the South and West have required less than usual. The price would probably have declined when the new tariff took effect, admitting Peruvian bark free, but the outbreak of war in Europe suddenly advanced the value in London from 5*s.* 2*d.* to 6*s.*, and it remained at that figure until the last of December, when the stock became so much reduced that sales were made at 7*s.* 9*d.* The high prices abroad relieving manufacturers here

from any fear of competition, they raised their price to $2.35, and have maintained it to the present date. Of foreign make there were entered for consumption in the United States for the past year, 3000 ounces*; for 1870, 37,550 ounces; for 1869, 117,996 ounces.

The great demand for quinine abroad caused an advance in Peruvian bark in England; it is hoped that this important chemical may be cheapened in the future, as the experiment of cultivating bark in the East Indies has been a success.

Mercury, before the opening of our report, had been gradually advancing from 51 cents to 57½ cents, but in July speculation commenced, and large sales were made at 62½ cents; during the next two months 70 and 75 cents was asked, and in December and January 90 and 95 cents was obtained for small lots. From these extreme prices a decline commenced, but as the supply was light, it was not until May that 85 cents was accepted, and in June 75 cents was the asking price. A combination having been effected between the Messrs. Rothschilds (who have a contract for the product of the Spanish mines) and the Bank of California, gave them control of three-fourths of the production of the entire world, and caused the great advance in this article, which is to be regretted, as the high prices have been injurious to some of our most important industrial interests. Recently, as the consumption seems to have fallen off, the price has been lowered. The product of this country for three years has been estimated at; 1868, 48,700 flasks; 1869, 33,600 flasks; 1870, 29,546 flasks, and the importation from Europe for the year ending June 30th, 1870, was 3145 flasks. For two years previous none had come from this source, and during the past year we have imported 3446 flasks. The export in 1868 was 14,415 flasks; 1869, 24,415 flasks; 1870, 13,788 flasks. The exportation to China, and the consumption by the mining interest in California and Mexico for the past eighteen months have left little or no surplus to send to the Eastern States, obliging them to depend upon importations from Europe.

Tartaric Acid during July, found ready sale at 60 cents; in August it advanced to 65 cents, but soon receded to 62 cents,

and kept at this figure until November; then, with small demand, 60 cents was accepted, and it continued dull and weak until the following March, when it improved slightly and then remained steady. English acid has generally sold at about 2 cents per pound higher than American, the production of which has increased since Argols have been admitted free; very little French or Austrian has been imported.

Castor Oil.—The shipments from Calcutta for six years have been as follows; in 1865, 3000 bags of beans, 3222 cases of oil; 1866, 10,000 bags of beans, 4609 cases of oil; 1867, no beans, 1508 cases of oil; 1868, no beans, 2201 cases of oil; 1869, 964 bags of beans, 4565 cases of oil; 1870, 1687 bags of beans, 7220 cases of oil. The withdrawals from the U. S. Custom House during the year ending June 30th, 1871, were 1297 cases*, while up to the same time in 1870, they were 3639 cases. Last July and August 29 cents was asked for pale oil in cases, but a large supply of American beans caused the price to fall to 26½ cents; during the winter large quantities of Western made oil were offered, and 23 cents was accepted. The market remained without much further change to the end of the year. The prospect for the new crop of beans is favorable, and lower prices are expected.

Oil of Cassia.—Exports from China to the United States for the seasons ending June 1st, have been as follows: in 1864–5, 45 half piculs; 1865–6, 127 half piculs; 1866–7, 261 half piculs; 1867–8, 138 half piculs; 1868–9, 221 half piculs; 1869–70, 180 half piculs; 1870–1, 477 half piculs. With a largely increasing stock prices have declined, and it now commands scarcely more than cost of importation ($1.05 gold in bond). This unprecedented low price has induced a larger consumption, the withdrawals from warehouse being 21,727 pounds, against 15,613 pounds during the previous twelve months.

Hellebore Root has been reported scarce in Germany, but a large stock of last year's importation has been held here. In April an attempt was made to raise the price, and a considerable quantity exchanged owners; it advanced from 16 cents to 22

cents, but without the usual demand for destroying insects on currant bushes, &c., the price soon fell back.

Chlorate of Potassa, owing to the increased consumption in making fulminating powder, advanced during July and August from 31 cents to 42 cents and then weakened; in January 34 cents was accepted, but in the spring, being scarce, another advance commenced, and by the end of June 48 cents was asked. The small stock of French make remaining in the market, brought 10 cents per pound more than the English.

Serpentaria has not been received in as large quantities this year as during each of the two years previous, and a few speculators have succeeded in advancing the price from 25 to 45 cents. The principal supply is from the Red River tract in Texas, very little being obtained now from the mountains of Virginia, which kind generally commands a higher price.

Ipecac Root opened in July at $2.60, but being made free by the new tariff, declined until January, when $1.65 was accepted, since which time it has remained without change. The amount entered for consumption at the custom-house was, for 1869, 11,071 pounds; 1870, 16,311 pounds; 1871, 26,687* pounds.

Cassia Buds.—The arrivals from China have been very large, of fine quality, and greatly in excess of consumption. The price opened at 87 cents, and closed weak at 63 cents.

Citric Acid opened at 88 cents in July; in August it was scarce and brought 93 cents; during the next three months the demand was light, and it declined 10 cents. Sales were made in January at 85 cents, but in February at 95 cents, owing to the high price of lemon-juice in London; later, it receded about 2 cents, closing weak.

Oil of Lemon.—The high price obtained for lemons last year induced very large shipments of them this year, and less oil was manufactured, no demand being expected from France. Fearing a short supply, importers sent out very large orders and soon exhausted the stock in Messina. New oil commenced to arrive early in the winter and sold for $3.25, but by February it was

worth $4.00, and the advance continued through the spring. The importation has been as great as last year, but the stock being controlled by a few parties, it reached $5.50 before the end of June. The high prices obtained have been, as usual, an inducement for shipping inferior and mixed oils, which found buyers at from 10 per cent. to 20 per cent. below the value of prime quality.

Jalap has been in large stock and dull; several lots of unusually poor quality were allowed to pass the custom-house, and found buyers; the duty, 50 cents per pound, was taken off in January, and the price during the year fell from $1.15 to 50 cents, with a large stock remaining unsold. The amount entered for consumption in 1869, was 17,462 pounds; in 1870, 23,262 pounds; in 1871, 60,518 pounds.

Juniper Berries.—The Italian crop turned out quite a failure, and only 288 bags, mostly of previous year's production, were received from Leghorn, causing a large demand to spring up for German berries. In February the price rose from 5 to 8 cents and continued firm.

Arnica Flowers have been very abundant, and the price has fallen during the year from 20 cents to 13 cents. The stock of good old flowers is still large, and the yield of the new crop will be up to the average.

Seneca Root sold through the summer and fall, at from 55 cents to 75 cents; during the winter it advanced to $1.25, but as supplies commenced to arrive in the spring, prices declined, and it found few buyers at 65 cents. In June some large orders from Europe were received, and the stock proving to be light, it suddenly advanced to $1.00.

Gentian Root was all last fall in the hands of speculators, and the price ranged between 13 cents and 16 cents per pound; very large supplies were shipped from Marseilles during the winter and spring, and with light demand for making bitters, the price fell rapidly, so that in May, 100 bales were sold at 4¾ cents, and small lots were jobbed at 6 cents. The importation for the year has amounted to 1933 bales, or about five

times as much as usual. 150* bales were re-exported, as the supplies in European markets were comparatively small.

Cream Tartar.—The market opened in July at 36 cents, advancing in August to 38 cents, with a large demand. It was feared that the troubles in France would interfere with its exportation, but it was soon discovered that the merchants there were shipping all that could be found in the country, as they were desirous of turning their stock into money. With increased supply, the market fell in October and December; sales were made at 36 cents to 35 cents, and continued at about these rates until June, when the price advanced in Europe, owing to small supply, and reports that France would probably put an export duty upon it. Heavy purchases were made here, with the effect of raising the price only 5 per cent., and it closed at 36½ cents. Crude argols being now admitted free of duty, parties here have been induced to put up extensive works for refining them, and making cream tartar; the duty of 10 cents per pound on the latter, leaving sufficient margin for our manufacturers to sell cheaper than it can be imported.

Balsam Copaiba was scarce last July, and after an advance from 90 to 92 cents, fell off with new arrivals in September to 87½ cents, and by January there was a further decline of 12 cents per pound. These low prices proved attractive to speculators, and for several months each new arrival was bought up, causing an advance in the jobbing price to 87 cents; here it remained stationary for about two months, when larger supplies arriving, holders became somewhat anxious, and submitted to a decline; at the close of the year it was weak at 84 cents. The consumption has not varied much from 82,000 pounds during the past three years.

Rhubarb.—Amount entered for consumption at the custom-house in 1870–71, 135,000 pounds; 1869–70, 62,492 pounds. Amount imported from China to the United States for the years ending June 1st, 1865–66, 8 piculs; 1866–67, 254 piculs; 1867–68, 220 piculs; 1868–69, 319 piculs; 1869–70, 328 piculs; 1870–71, 83 piculs. The direct importation of this article shows a decrease; for some reason those parcels received via

London, have turned out more profitable and satisfactory. Good quality has ruled very steady, while the lower grades have increased in stock, and fallen in price. Several parcels have been imported in powdered form, and the natural inference has been that in the crude state the quality was too poor to pass the custom-house; the authorities have made objection to admitting it on account of the difficulty of judging the quality and detecting adulterations. The stock in London in 1871 was 2121 cases; in 1870, 1590 cases; the increase is in ordinary grades, while good quality is more scarce.

Cardamoms declined in price during the autumn from $5.00 to $4.25, but the stock became so reduced in December and January, that notwithstanding the duty of 50 cents had been taken off, the price advanced to $4.75, and was maintained for about two months, after which time several shipments arriving, it fell rapidly, and in June, $3.00 was accepted. We have sent to your exhibition a sample of seeds which have been offered in London, covered with a white powder, with a mistaken idea of improving their appearance.

Oil of Peppermint during the first part of the year was firmly held, but the product of fine new oil turned out large, and considerable of the old remained on hand. In the winter, holders became anxious to realize, and pressing their stocks on the market, prices declined from $3.35 to $2.75. The area planted last spring is said to be only one-half that of the three previous years, but the plants are reported as looking well; it is estimated that there is about 30,000 pounds to be carried over to next season, and the market closes weak.

Iodine has advanced very much since May, and $7.50 per pound is now asked for it. Iodide of potassium has been advanced from $3.60 to $5.75 for American; English and French brands are almost out of market.

Oil Anise.—Exports from China to the United States for the seasons ending June 30th, have been in 1864–5, 48 half piculs; 1865–6, 20 half piculs; 1866–7, 77 half piculs; 1867–8, 218 half piculs; 1868–9, 107 half piculs; 1869–70, 74 half piculs;

1870–1, 212 half piculs. Although the importation has been greater than usual, the stock has been held in strong hands. After selling at $3.00 to $3.10 until November, with a good demand, it advanced to $3.50, and has since remained firm. The stock in London in 1871 was 115 cases, and in 1870, 123 cases. Quotations, 8*s.* 9*d.*, against 8*s.* 4*d.* last year.

Gamboge.—Total importation, 219 cases, all of good quality, of which 179 came from China. We have received occasional shipments from Calcutta, but have generally been dependent upon getting our supplies through London, which has more direct communication with Siam, the chief place of export for this article. The decline in the gold premium and the 10 per cent. duty being taken off, have reduced the currency price from $1.00 to 85 cents. The stock in London is 142 cases, against 224 cases last year; ordinary is quoted 10 per cent. higher, and fine pipe 20 per cent. higher.

Cantharides.—20 cases have been imported from China, and although of a brown color, and not as good-looking as the European flies, proved to possess equal vesicating powers, and went into consumption. The product of Europe seems to have decreased, and it may be well that we have a new source of supply. With a small stock on hand, prices opened at $2.25 per pound, but with light demand, are now quoted at $1.50, the duty, 50 cents per pound, having been taken off in January. Recent reports from Russia are unfavorable, and an advance there is expected. France has not been a buyer, but our country has imported largely, and very little stock remains in Europe. Entries for consumption at the United States Custom House were, in 1868, 13,465 pounds; 1869, 9250 pounds; 1870, 7575 pounds; 1871, 18,907 pounds.*

Camphor.—The demand was large last summer, and refiners had some difficulty in filling their orders. For immediate deliveries, 75 cents was asked, but contracts were made at 72 cents for a month later. Stocks did not accumulate, and the price declined slowly; it was not until September that refined could be bought from store at 73½ cents; subsequently declining, it reached 70 cents in November, and advancing 1 cent in

January, continued steady to the end of the season. Crude has been in large stock, selling in bond at 16½ to 18 cents, gold. Custom-house entries for consumption were, in 1868, 199,644 pounds; 1869, 518,540 pounds; 1870, 487,444 pounds; 1871, 580,294 pounds.* The exports from China to the United States for the past seven seasons, ending June 1st, have been respectively, 251 piculs, 538 piculs, 2020 piculs, 576 piculs, 5220 piculs, 5147 piculs, 4282 piculs. These figures show plainly why this article is now selling in bond at about half what it brought a few years ago. The loss at sea of the "Blue Jacket," bound for England, from Japan, with 2500 tubs, had little effect upon the market, as the supply was already heavy. The stock in London, January 1st, 1871, was 12,699 piculs, and in 1870, 6151 piculs, quotations showing a decline of 15 per cent.

Orris Root.—The supply last autumn was very small, and poor in quality, and reports from Leghorn and Trieste do not speak more favorably for the next crop.

Olive Oil.—The last yield, like the two previous ones, proved abundant and of good quality. The large substitution of refined cotton-seed oil has also tended to lower the price, $1.30 per gallon being now asked, against $1.50 last year. The withdrawals from the custom-house were, in 1868, 46,000 gallons; 1869, 264,000 gallons; 1870, 114,000 gallons; 1871, 216,900 gallons.*

Chloral Hydrate has been plenty, and prices fell during the year from $5.50 to $2.50 per pound. As an anæsthetic it has not proved as popular as was first expected, and the consumption has so decreased that the shipments from Germany have been but one-third the amount of the previous year.

Balsam, Canada, has been scarce, and as stocks became reduced, advanced from $2.65 to $3.50 per gallon. The importation has been only 1700 gallons* against 2200 gallons last year.

Elm Bark.—The crop last year was estimated at 60,000 pounds, but of this a very small proportion was thick, white, and brittle. The gatherers have had more favorable weather this spring, and what selected bark has come into market has been handsome.

Calabar Beans have been more plenty, and the price has steadily fallen from $3.25 to $1.25.

Tonca Beans have been very abundant for several successive years, contrary to previous experience, and with the accumulating stock the price has steadily declined; 70 cents was considered low last July, but the decline continued until last February, when it was reported that no more large shipments were on the way from Angostura, and considerable sales were made at from 47 to 50 cents. With a fair demand, the market subsequently advanced to 55 cents, and closed firm.

Vanilla Beans have been of very good quality this year, although the quantity was somewhat below the average yield. There being no demand from France the deficiency was not felt, and prices did not advance. The new beans that have recently come into market are lean and reddish; the report is that we will not get any as fine and rich as last crop.

Cubeb Berries have been very dull; the market has been overstocked, and they are now selling at 18 cents, while 23 cents was asked at the beginning of the year. A shipment of 750 bags, costing to import 8 cents, gold, sold after being in store some time at 5½ cents, gold, in bond.

Chamomile Flowers.—The crop of Roman chamomiles was small, and in consequence of unpropitious weather at the time of collecting, they were of a dark color. A larger supply came this year from Belgium, and being entirely white, commanded equally high prices, although not considered equal in strength to those with yellow centres. German chamomiles having been gathered before the rainy weather commenced, turned out of good quality, and have been abundant.

Rose Leaves, with a small supply, have sold at high prices, and the old stock is now exhausted. Advices concerning the new crop are unfavorable.

Aloes, Cape, have been dull, with a large quantity in market. Socotrine and Barbadoes of good quality became scarce in the spring, and quotations advanced. Several shipments of Natal aloes have arrived, which being of light color, and making a

bright powder resembling Socotrine, found buyers who were willing to substitute it for the more valuable variety.

Gum Arabic.—Sorts has been dull, and when supplies of new crop came into market in November, the price, which had been ruling at 34 cents, dropped to 27 cents. In January, under the new tariff, sales were made at 24 cents, and with light demand they afterward declined about 10 per cent. The quality has been of only medium grade, not as good as that of last year; the yield proved to be below the average, and in autumn prices advanced in Egypt 10 to 15 per cent., but with little effect elsewhere, as other markets were well supplied with what France had usually consumed. Picked gums, especially the higher grades, have been quite scarce, and have commanded relatively higher prices. Stock in London, July 1st, 4068 packages, against same time last year, 3526 packages.

Gum Benzoin.—The importation has been 6200 pounds against 7700 pounds in 1870, and the consumption continues very light. In London, the stock has been increasing for the last three years; in 1868 it was 1239 cases; 1869, 1348 cases; 1870, 1647 cases. Contrary to former experience, the product of four successive years has proved of good quality, and low grades are scarce. The loss at sea last October, of a shipment of 5000 pounds did not affect the market, as there was already an overstock.

Gums Catechu and Kino have been in good supply, and have sold at very low figures.

Assafœtida.—The arrivals have been generally of pretty good quality, and in better condition than formerly, which is attributed to the shorter passage via the Suez Canal. The shipments, however, have been small, and the price has varied but little from 38 cents. The importation for 1871, was 74,217 pounds,* against 116,425 pounds in 1870.

Guaiacum.—Resin of good quality has been scarce, ranging between 75 cents and 65 cents, while common grades mixed with dross have been unsalable at 25 cents to 30 cents.

Kousso, for a number of years so scarce, has arrived in

London in large quantities, and the price has declined 50 per cent.

Leaves.—Buchu opened at 40 cents for short and 50 cents for long; as January approached, the price (duty paid) gradually declined in anticipation of its being placed on the free list; afterward the demand continued light, and in March and April sales were made at 20 cents and 30 cents. Our large orders to London in the spring so reduced the stock there, that an advance took place, and at present quotations it would not pay to import. Receipts for 1870–1 have been 60,550 pounds,* against last season, 29,550 pounds.

Belladonna and *Henbane* turned out small yields of indifferent quality, owing to bad weather at time of gathering. Digitalis and aconite have been plenty, and handsome; senna of good quality has been scarce; Alexandria having been generally much broken and of weak odor; Tinnevelly and Bombay, mostly small leaves and of pale color.

Lycopodium has been in light stock, and in quality not as fine as usual. The reports from Russia with regard to the new crop are unfavorable, and quotations are likely to remain firm.

Manna.—There was very little old crop in market, when the new arrived, consequently prices kept very steady; only changing in January, when the new tariff took effect and $1.00 was accepted for small flake; it then remained without fluctuation until the end of the season.

Valerian Root has been very plenty in Germany, and the crop in Vermont being also good, prices have fallen throughout the year. The quality of the English root, shipped to this market for the last few seasons, has been indifferent and dirty; but for retailing, always commanded the highest figure, and for this reason manufacturers of extract have generally used the German.

American Saffron.—The previous crop was exhausted when last came into market, and high prices were immediately established, and kept up to the end of the season. Prospects for new crop are favorable, as many more plants have been cultivated.

Seeds.—The crops of anise and fennel in Germany were very small; coriander, although somewhat more plentiful, was injured by bad weather at the time of gathering, causing it to become musty and of bad color. About 5000 pounds of small bright seeds were received from California, and brought fair prices. Caraway seeds have been very abundant, and there is a good stock to carry over to next year, which is fortunate, as unfavorable reports have been received in regard to the growing crop.

JOHN MCKESSON, JR.

	July, 1870.	July, 1871.
Acid Acetic, No. 8,	$0 14	$0 12
" " pure,	20	20
" Benzoic sublimed,	32	27½
" " German,	3 50	3 10
" Citric,	88	94
" Oxalic,	26	32
" Tartaric, cryst.,	61	60
Ammonia Carb., in jars,	19½	20
" " in bulk,	18	19
Arrowroot, Bermuda, prime,	44	55
Balsam, Canada, true,	2 85	3 75
" Copaiva,	90	82
" " solidifiable,	1 00	
" Peru,	4 00	3 75
" Tolu,	1 05	90
Bark, Angostura,	40	40
" Bayberry,	7	7
" Canella,	12	10
" Cascarilla,	10	9
" Cinnamon, Ceylon,	1 35	1 25
" Cotton-root,		25
" Elm, select,	15	15
" Peruvian Loxa,	70	65
" " Red Crown,	3 75	3 25
" " " Ecuador,	1 30	1 25
" " Red Rubiginosa,	50	45
" " Yellow Calisaya,	1 30	1 30
" " Yellow Bolivia,	65	60
" " Yellow Maracaibo,	25	20
Bark, Prickly Ash,		$0 15
" Sassafras,	9½	8
" Simaruba,	45	35
" Wild Cherry, select,	25	15
Beans, Calabar,		1 25
" St. Ignatia,		1 10
" Tonka Aug., prime,	70	55
Berries, Cubebs,	23	
" Juniper,	5	7
Buds, Cassia,	87	62
Calomel, Hyd. Sub., English,	1 20	1 50
Cantharides,	2 00	1 50
Cassia,	55	40
Chloral Hydrate,	5 50	2 25
Cloves,	31	14
Cocoa Butter, pure,	75	63
Colocynth Apples,	40	22
Copperas,	2	1½
Corrosive Sublimate,		1 10
Cream Tartar, cryst.,	36	36
Creosote,	95	1 00
Ergot, prime,	75	85
Ext. Belladonna,	3 15	3 00
" Cannabis Indicus,	1 00	80
" Conium,	1 50	1 35
" Dandelion,	4 25	3 85
" Licorice, P. & S.,	43	48
Flowers, Arnica,	18	13
" Chamomile, old,	22	22
" " new,	28	35
" " German, 1870,	30	35
" Lavender,	8	8

	July, 1870.	July, 1871.
Flowers, Rose, 1870,	$1 87	$2 00
Gum Aloes, Barbadoes,	45	45
" " Cape,	15½	8
" " Socotrine, gen.,	80	70
" Arabic sorts,	34	23
" " " sifted,	38	25
" " 1st select.,	77	58
" " 2d "	55	39
" " 3d "	46	34
" Benzoin, marbled,	80	68
" Camphor, refined,	72	71
" Catechu, true,	9	8
" Euphorbium,	16	16
" Fetida, prime,	42	38
" " fair,	36	30
" Galbanum,	1 10	1 00
" Gamboge,	95	82
" Guaiac, select,	50	47
" Kino, true,	35	35
" Myrrh, Turkey,	50	45
" " India,	47	38
" Olibanum Tears,	40	35
" " garblings,	20	18
" Sandarach,	47	35
" Sanguis, Draconis, mass,	70	55
" Sanguis, Draconis, reeds,	95	80
" Scammony Virgin,	13 50	11 00
" Tragacanth, White Flake, No. 1,	1 15	85
" Tragacanth, White Flake, No. 2,	95	60
" Tracaganth, Brown Flake,	75	50
" Tragacanth, Vermicelli,	75	55
" Tragacanth, Round sorts,	38	33
Herb, Bittersweet,	12	11
" Cannabis Indicus,	1 00	45
" Chiretta,	1 00	40
" Coltsfoot,	15	12
" Horehound,	15	14
" Lobelia,	14	15
" Sage,	14	10
" Wormwood,	16	15
Indigo, Bengal,	2 50	2 25
Iron by Hydrogen,	$1 90	$2 00
Isinglass, Russian,	6 50	3 75
Kousso,		1 25
Lapis Calaminaris,	5	
Leaf, Aconite,	20	16
" Belladonna,	18	19
" Buchu, short,	40	22
" " long,	50	35
" Conium,	17	15
" Digitalis,	13	16
" Henbane,	19	16
" Laurel, true,	10	8
" Matico,	35	45
" Senna Alexandria,	25	14
" Senna Alexandria, sifted,	35	24
" " Bombay,	17	15
" " Tinnevelly,	25	21
" " Uva Ursi,	9	8
Lime, Chloride,	3½	4½
Lycopodium,	50	60
Madder, Dutch, prime,	14½	16
Magnesia, Calc., Jennings', 10 pound round cans,	80	85
Magnesia Calc., Jennings', 1 pound Bats.,	1 05	1 10
Magnesia, Calc., Ponderous, 1 pound Bats,		1 55
Magnesia Carbonate, Jennings', 2 oz. papers,	34	34
Magnesia Carbonate, Jennings', 4 oz. papers,	32	32
Magnesia Carb., inch square,	57	60
Manna, Small Flake, prime,	1 25	1 45
" Large Flake, prime,	1 90	1 88
" good sorts,	90	65
Mercury,	70	86
Morphine Sulph., ½ oz.,	8 80	5 50
Moss, Irish. Best,	15	15
" " Fair,	8	8
" Iceland,	10	11
Musk, Tonquin, pods,	11 00	8 50
" " grains,	27 00	21 00
Nux Vomica,	8	8
Oil, Almonds, Essential,	15 50	15 00

	July, 1870.	July, 1871.
Oil Almonds, Sweet,	$0 52	$0 54
" Aniseed,	3 00	3 50
" Bergamot, prime,	5 50	5 63
" " fair,	5 15	5 00
" Cajeput,	1 37	1 20
" Camphor,		2 00
" Caraway Seed,	3 50	3 38
" Cassia,	2 80	2 40
" Castor, Pale Cases,	29	21
" " White Filtered,	31	23
" Citronella, Winters,	2 15	2 00
" Cloves,	2 75	1 60
" Cod Liver, Filtered, N. F.,	1 80	1 80
" " " Norwegian,	2 20	2 00
" Copaiba,	2 15	2 20
" Croton,	2 60	2 80
" Cubebs,	3 00	2 75
" Juniper Berries, fine,	3 25	3 75
" " Wood,	85	85
" Lavender Flowers,	2 60	2 60
" Lemon, prime,	3 20	5 75
" Mustard, Essential,	22 00	24 00
" Olive, pure Malaga,	1 50	1 30
" " fine,	3 50	3 75
" Orange,	2 60	3 25
" Pennyroyal,	2 75	2 50
" Peppermint,	3 50	3 00
" Rose Kissanlik,	8 75	8 50
" Rosemary, No. 1,	2 00	1 65
" " Triesta,	90	90
" Sandal Wood,	13 00	13 00
" Sassafras,	75	80
" Savin,	1 75	1 75
" Spearmint,	3 25	3 25
" Succin, Rect.,	80	90
" " Crude,	45	40
" Thyme, Red Flowers,	1 85	1 50
" " " "	1 10	1 10
" " White "	1 85	1 65
" Valerian, German,	16 00	16 00
" Wintergreen,		5 00
" Wormseed, Balto.,	3 00	3 00
Orange Peel,	13	10
Pepper, Bird,	31	19
Pill Hydrarg., U. S. P.,	70	80
" " "	53	50
Pitch, Burgundy, true,	12½	9

	July, 1870.	July, 1871.
Potassa, Bichromate,	$0 20	$0 25
" Chlorate, English,	31	49
" " French,	45	55
Potassium, Bromide,		95
" Iodide,		6 25
" " French,	4 15	6 50
Quinine, Sulphate,	2 25	2 35
Red Precipitate,		1 25
Root, Aconite, German, select,	16	17
Root, Aconite, English, select,	1 00	1 00
Root, Alkanet,	15	14
" Althea,	17	
" " cut,	22	20
" Calamus, peeled,	14	15
" " White, peeled and split,	55	50
" Cohosh, Black,	14	10
" Colchicum, German,	14	16
" Columbo,	17	15
" Dandelion,	20	18
" Elecampane,	12	12
" Galangal,	9	6
" Gentian,	13	7
" Ginger, Jamaica, blchd.,	24	19
" Golden Seal,	17	22
" Hellebore, Black,		16
" " White,	12	14
" Ipecac, Rio,	2 60	1 65
" Jalap, V. C.,	1 15	50
" Licorice, select,	14	12
" Mandrake,	10	10
" Orris,	12	13
" " Finger,	60	50
" Rhatany,	24	30
" Rhubarb, Bremen, trimmed,	6 50	4 00
" Rhubarb, China, select,	3 00	1 75
" Rhubarb, China, select cut,	4 25	5 00
" Rhubarb, China,	1 70	80
" Sanguinaria,	9	9
" Sarsaparilla, Honduras,	39	34
" Sarsaparilla, Honduras, cut,	43	40

	July, 1870.	July, 1871.
Root, Sarsaparilla, Mexican,	$0 18	$0 16
" Seneka,	70	1 20
" Serpentaria,	28	50
" Spigelia,	30	50
" Spikenard, crsh'd,	16	
" Squills, White,	9	7
" Stillingia,	15	15
" Valerian, English,	45	40
" " Dutch,	25	20
" Zedoary,		24
Saffron, American,	7 50	2 25
" Spanish,	17 00	15 50
Sal Epsom,	3¾	3
" Glauber,	2	2
" Rochelle,	41	33
Seed, Anise, Italian,	24	22
" " Russian,	15	
" " Star,		44
" Canary, Smyrna,	3 65	3 40
" " Sicily,	4 37	4 00
" Caraway,	18	11
" Cardamom, Malabar,	5 10	3 10
" Colchicum,	15	20
" Coriander,	14	11
" Cumin,		35
" Fennel,	15	15
" Flax, cleaned,	7¾	6½
" Fenugreek,	8½	7

	July, 1870.	July, 1871.
Seed, Grains, Paradise,	$0 20	$0 14
" Hemp,	2 50	2 40
" Musk,		60
" Mustard, White,	12	11
" " Black, Triesteé,	18	21
" Rape,	6 00	5 25
" Worm, Levant,	22	17
" " American,	14	11
Soap, Castile, mtld.,	12¾	13
" " White Conti's,	20	17½
Soda Bicarb., Newcastle,	5	5½
" " extra fine,	9	8
" Sal,		2½
Styrax Liquid,	50	40
Sugar of Lead,	25	23
" Milk,	35	35
Sulphur Flowers,	4⅜	3⅞
" Lac,	15	15
" Roll,	3½	3¼
Tamarinds, W. I.,	10	10
" E. I., sour,		15
Water, Orange Flower, 5 gal. cans,	14 50	12 00
" Rose, 5 gal. cans,	16 00	
Wax, White, best,	78	67
" " Ockmid's,	74	60
" " Sun bleached,	68	55
White Precipitate,		1 45

SPECIAL AND VOLUNTEER REPORTS AND ESSAYS.

I. PHARMACY.

THE DRUG BUSINESS:

ITS RELATION TO MEDICATION AND PHARMACY.

BY DANIEL C. ROBBINS.

THE drug business, as a special pursuit in its present relations to medicine and all the arts and needs of life, is modern. It deserves consideration, because it is one of the outgrowths of an advanced state of society, and its condition in all countries is formative. What shall be the direction of this pursuit, and how to determine suitable and efficient legislation in regard to the practice of pharmacy throughout our diversified and undeveloped country, is an important question.

The apothecary's shop or store, more or less complete as a necessary accompaniment of civilization, has always existed; indeed, the germ of the pursuit is seen in all barbaric life; as a familiar example in our own wilds, the medicine-man in his Indian lodge is recognized as a sort of wizard or priest, as well as a professed physician, and something of an apothecary. Life and death, health and disease, have always been what they always will be, important factors. Medical men attached to our remote religious missions inform us that in the interior of that oldest and most stationary of empires, China, apothecaries' shops exist as they have existed for centuries, bearing much resemblance in fixtures, &c., to our own city establishments, and these shops or stores are said to be supplied with most needful drugs. The mercurial practice, which has been so much discussed of late, is said to be well understood in China, and there,

as elsewhere, empiricism exists in due proportion to the lack of scientific attainment which prevails. All primitive people appear to have recognized disease as some malign influence, and death as one of the greatest of mysteries, hence the natural connection between wizard and physician. With the progress of science, the priestly and medical offices have been separated, and the recognition of evil as a distinct personality or influence in theology, as well as medication, has nearly ceased. The study of Satan and his ways has given place to the study of disease, and so in lieu of past exorcism, we have modern specifics, the latest marvel being "Cundurango," which it is hoped will prove to be one of our best alteratives.

There are two facts in connection with pharmacy and medication that are worthy of note. Pharmacy is said to apply solely to medicinal substances, while as yet all attempts, and we have had many, to define or classify any line of substances as exclusively medicinal have failed. Medication is said to apply to the treatment of disease, which is a something we can never define until we know all the conditions of health and the laws of physiology. Dogmatism in theology and empiricism in medication have the same basis,—we cannot define the Deity, and so we dogmatize. We have not fully probed or searched out man, and we empiricize; and for similar reasons we may look for progress in medication to come, as all progress in theology has ever come,—not from within, but from without the professions, through the correlated sciences.

Animal and vegetable chemistry and pharmacy have put away a deal of empiricism, and the work is not finished. All our so-called regular practice in medication is simply the sum of experience devoted to the study of disease as a great factor. We have in our country three principal schools of medical practice, which may be summed as follows: the regular practice is primarily a study of disease and its phenomena; Eclecticism or vegetable practice is a search for new remedies; and homœopathy, the most consistent, the most intelligent empiricism we have, begins and ends with the contemplation of all disease as some specific poison to be neutralized by another poison, "similia similibus curantur." Of course this is not the place to discuss

the merit of any particular practice, but it is important to consider well-known facts that bear directly upon our profession when the question of the future direction of pharmacy is involved.

Medical schools perform for medication what sects do for religion, they enlarge the boundaries of thought and acquisition; two forces are said to exist in everything, and our so-called eclecticism and homœopathy represent the centrifugal element in medical progress, and it is worthy of note that taking the regular practice as the centre of medical knowledge, these two systems stand in extreme opposition. Eclecticism began with a search for new indigenous remedies exclusively vegetable, while homœopathy fell back upon the oldest of all known remedies, its positive reliance being mainly mineral: sulphur, antimony, arsenic, mercury, &c., in particular, mercury; our homœopathists being to-day the most persistent mercurialists we have, using as always in preference the oldest preparations. Blue powder, which is an equivalent of blue mass, and white mercurius, a mixture of corrosive sublimate with sugar of milk, the one being the oldest known pharmaceutical preparation, and the other the oldest known chemical preparation of mercury.

The use and value of mercury in medical estimation at various periods of history, is one of the most interesting subjects in medicine. The celebrated Dr. Rush, who was an orthodox practitioner, and thoroughly centripetal in his mind, is reported to have said that about all that was necessary in medication was calomel and the lancet, and he used them freely. To-day the one is folded up, and the other is held back for consideration. The central force, however, always controls, and sooner or later "vegetablepathy" and "homœopathy" will be merged in the regular practice, their gifts being from the first valuable additional remedies, and from the last, more experience—a better administration of well-known medicants.

Pharmacy is said to be a branch of medication, and if so, to what school shall it attach itself? The fact is, that pharmacy has nothing to do with medication except to aid it, and it can only serve the profession by leading it onward in the path of its own

progress. Many think that pharmacy in the future should continue to be what it has been mainly in the past with races of English speech,—a mere branch of medical practice, confined exclusively to medication, and identified, of course, with that form of practice which has come of the largest experience, the regular school as it is called; while other minds in Europe and in our own country, the most advanced we have in medication, as well as pharmacy, take quite an opposite view.

In the rooms of the New York College of Pharmacy, there is printed on one of the blackboards, the following definition of pharmacy, by direction of one of our *most useful* professors:

Pharmacy.—The art of selecting, preparing, preserving, and combining medicinal substances, and of dispensing them for use.

Pharmacist.—Synonymous with pharmaceutist and apothecary, but not with druggist or chemist,—an educated, qualified practitioner of the art of pharmacy; a dealer in substances used to prevent and relieve disease; one who has the knowledge and skill to secure a proper quality in his merchandise, and to prepare this for its ultimate uses, and to secure it against criminal misapplication.

Druggist.—A merchant in drugs, a dealer in substances, which though originally used in medicine, came to be used in many other arts. The druggist is simply a merchant like the grocer, the dry goods dealer, &c. A druggist may sell bad medicine without criminality, but a pharmacist never can.

In other words, pharmacy should be confined to a knowledge of medicinal substances, and the art of dispensing them. To use the language of this distinguished professor, pharmacy should always be a branch of medication; the druggist is simply a merchant, like the grocer, &c., and may deal in bad drugs without criminality, but the pharmacist must be very much more: he should be a dealer in substances used to prevent and relieve disease; one who has the knowledge and skill to secure a proper quality in his merchandise, and to prepare this for its ultimate uses, and to secure it against criminal misapplication.

As a druggist, all I have to say is, that so far as dealing in

drugs is concerned, of the distinction between druggist and pharmacist as dealers, is to consist in the fact that the one may deal in bad drugs, but the other cannot. We had better drop the word druggist altogether, or use it only as a term of reproach. To speak of pharmacy as limited to medicinal substances is also a mistake, because almost all substances have some medicinal relations, the word medicinal being always a comparative expression, a professional technicality. The term medicinal, as applied to certain commodities, is used by medical men as the clerical profession apply the term sacred to certain special things as pertaining to the Deity, while we know that all things are of God, and that the most important remedies we have, have also the most important relations in the arts, for example, mercury, of which thousands of pounds are used in the arts where a single pound is used in medicine.

To call a man a druggist because he may deal in some or more drugs is also a mistake, which many of our heaviest dealers in drugs would repudiate. The druggist is always understood to be more or less of a pharmacognosist, and his claim to his profession depends, or should depend, upon a knowledge of his profession.

On the other side of this question, there is, in a recent number of the American Pharmaceutical Journal, an excellent article on the relations that should exist between the doctor and the apothecary (by William L. Turner), which concludes as follows: "I know that various attempts have been made to create an impression that pharmacy is merely a collateral branch of or dependent attachment to medication. To such an extent has this attempt been made in some localities, that medical men have assumed to prescribe under what legislative restrictions pharmacy should exist. This attempt has not been made by medical men only; pharmacists themselves, in some instances, have taken up the cudgel and battered away in defence of some pet theory of medicine; thus identifying themselves with this, or following in the wake of that, as though it were a proper subject of investigation where pharmacy should be located, or to what division of medicine it should be attached.

"Is pharmacy to be confined to one or more beaten paths?

Shall it be denied the privilege of entering newly opened avenues, and positively forbidden to open any itself?"

As astronomical science knows no bounds, but embraces the universe, so let pharmacists at least regard medical science as embracing all medical knowledge.

Of course, the study of disease as a specialty will always be essential in medication, that the physician may diagnose his case, but no fact is more certain than that future progress in medication, the limitation of empiricism, will mainly depend upon a better understanding of the laws of physiology, of hygiene, what health really is, and what is essential to preserve it.

At the present time, we may thank God that so advanced and so rapid is the progress of all knowledge, that a continued connection between medication and pharmacy is as impossible as the old one between theology and medication. Professor Huxley, in England, in addressing the graduating class of medical students in the University, recently made the following remarks, as necessary in the future for better medical education. He said, "that having been an examiner of graduates for years, he had noted that while students were generally well informed about surgery, they were apt to be quite deficient in science pertaining to physiology," and he said, "I would cut down theoretical branches of study to a considerable extent; would have the elements of physical science taught in the primary schools; physics, chemistry, botany, and the like. Comparative anatomy ought to be absolutely abolished, although it would involve the putting back of such branches as zoology and botany to the student's early education in ordinary schools. I would also abolish Materia Medica." [Cheers.] He could not understand why gentlemen who had to practice medicine should be obliged to learn all about drugs and where they came from; they might just as well be required to learn all about cutlery because they used knives [laughter and cheers]; and he thought that medical education for the future should be limited to nine subjects: Physics applied to Physiology, Chemistry applied to Physiology, Physiology, Anatomy, Surgery, Medicine, Obstetrics, Hygiene, and Medical Jurisprudence; which would be quite enough for one man's pursuit.

The future of pharmacy and the direction of the drug business are inseparably connected, and most of the difficulties that stand in the way of *efficient legislation* in our country for the elevation of the profession consist in the fact that the tendency of the business within and without our large cities or centres of population is quite opposite. Our commercial lists inform us that we have within the American Union some twelve thousand druggists practicing pharmacy, while the whole membership of the American Pharmaceutical Association comprises about seven hundred persons, and the probability is that not one-fourth of all persons engaged in the practic of pharmacy could pass a liberal examination. There is a great deficiency in the means of proper education throughout our new and sparsely-settled country, where in the interior most of the education that does exist is self-taught, or has come through the medical profession. Nothing is more common than for some person in the interior to undertake the business at the request of the community or by advice of neighborhood physicians, to supply the want of an established druggist, and this individual, who is generally selected more with reference to personal character and supposed fitness than pharmaceutic attainments, commences to dispense drugs, practice pharmacy, and learn the art, at the same time, his tutors being Wood and Bache, Parrish's Pharmacy, and the neighboring physicians. This is an inevitable incident of a new country in process of development, and is one that foreign pharmacists do not comprehend.

Judged superficially, pharmacy in our Union is in a very low state, when, in fact, this judgment will only apply as far as special education is concerned. There is no more painful fact connected with the progress of pharmacy in our country than the indisputable one that while throughout our interior country, where pharmaceutic education is least, the character, and standing, and social position of the druggist and pharmacist, such as he is, is highest. Now the reason of this consists in the fact that in the interior the druggist is an extemporized pharmacist, selected more with reference to personal character than attainments in his profession, and he is closely connected with all the arts and industries and needs of daily life. The druggist's store is apt to be the

place where the best intelligence centres, and the druggist is recognized as a sort of standing encyclopedia of useful knowledge of all sorts. Very similar conditions, it is said, attach to the pursuit of our profession on the Continent of Europe, wherever pharmacy is a pursuit limited by law as well as a recognized profession. A status and social position is accorded to the druggist superior to any business pursuit, quite different from the regard which the apothecary holds in our large cities, where, as a rule, he fills the place of his old predecessor in England, an attache to some neighborhood physician to fill prescriptions and prescribe for the lower classes. Our city apothecary has allowed himself to drift quite away from all the arts and most of the real needs of life, and as a dependent to some medical office adds the dispensing of various preparations and specialties, and with always open hours and large expenses, his position, to say the least, is unfortunate. With his many-colored windows, *always open*, he is a shining example of the drift of pharmacy in the wake of medication.

Legislation to elevate the profession in our cities and secure better education, and, through improved education, better reward for service and a better personnel in the profession, is a pressing necessity. Legislation to redeem our profession from its unavoidable connection with proprietary empiricism and the depressing influences of city usages is a most important matter. The public demand education because they suppose that education will put a stop to errors and casualties, which is well for us, but a mistaken idea. What we need more than education is something to elevate the personnel of the profession, for without character education will do but little good. Not more than three thousand of our twelve thousand druggists reside in our large cities, and statistics show that more serious errors occur among these three thousand, where pharmaceutic education is highest, than among the nine thousand diffused throughout our interior, indeed it is well known that serious errors in the interior are very rare. For the protection of the public, personal character and a just sense of responsibility are vastly more important than all the education to be obtained. To be brief, we cannot give pharmacy any true standing without placing it in a per-

fectly independent position; and to meet the depressing influence of that city life which is becoming more and more a feature of the age, we must have needful legislation, because it is a duty we owe to the public as well as to ourselves. We require legislation to regulate the practice of pharmacy and for the drug business, because the pursuit and the profession are inseparably connected, and because as yet most of the laws which refer to our pursuit are either positively detrimental or of questionable utility. In national legislation, our ill-advised and enormous tariff on imported drugs and chemicals has been fully discussed, and we have succeeded at last in impressing the government with a belief that all crude goods (drugs proper) should be free of duty, but chemicals are still classed as manufactures, and subjected to enormous duties, under the plea of protection to home industry, when in fact they are only what the French call them, fabrications or products of science, scientific combinations of materials, and are not manufactures of skill or proper subjects for protective duties. Our excise and local taxes, wherever applied, are more onerous than those of any other respectable pursuit, so much so that most druggists, to avoid complicated taxes, are doing business as liquor dealers and not as druggists. Our stamp duties are very complex and troublesome. As with national, so with local legislation. The State of New York, representing about one-ninth of the whole population of the country, has recently passed a law to regulate the practice of pharmacy in the city of New York, which totally ignores the existence of any school of pharmacy, and has invested supreme control in a board of four persons, only one of whom is to be a pharmacist. This board has the most unlimited powers, can charge any fee it pleases, and can refuse or grant license to whom it chooses. This board, created by special law, was originally designed to consist solely of six physicians, but, after much effort, was modified in the House of Assembly and made to consist of two physicians, two pharmacists, and two druggists, a singular combination, considering the fact that no druggist was fitted to fill the place unless he understood pharmacognosy as well as pharmacy. In passing the Senate, the commission was cut down to consist of four persons, two physicians, one pharmacist, and one drug-

gist, all indicating the low estimate of our profession in our cities.

Special legislation is always objectionable, but in the present condition of pharmaceutic education in our country, no other legislation is possible, or in fact, necessary. The country, our great interior, will take care of itself. We have the same problem in legislation for pharmacy that exists in legislation wherever representative institutions prevail. How to live in cities, how to legislate for cities, is the great question of the age, which the prophetic mind of Jefferson saw at the formation of our government, when he dismissed the subject calling cities sores on the body politic; but sores must be treated if they are sores, especially when they are growing more numerous and larger every day. The position of our profession in our great cities is a problem we cannot dismiss as the great statesman did with a sneer, because that which was in his day only in prospect is in our time a present evil. Unfavorable and unjust national and local laws which affect our profession should be disposed of as soon as possible, and wise legislation secured to regulate the practice of pharmacy in all our larger cities, so as to secure, by means of a higher standard of education, and better reward for fewer hours of service, a better personnel, that we may elevate the standard of the profession.

ON APPRENTICESHIP.

BY SAMUEL M. COLCORD, OF BOSTON.

QUERY 16. What system of apprenticeship to Pharmacy is adaptable to this country? What amount of preliminary education should be required of such apprentices, and what means should be employed to render their apprenticeship profitable to themselves and satisfactory to their preceptors?

APPRENTICE and apprenticeship are terms now used in a very vague and indefinite manner. Formerly these terms conveyed a definite idea, fixed by law, although not farther back than the Roman Empire these terms were unknown, and there is no Greek or Latin word to express the idea. It was not until the

reign of Elizabeth that apprenticeship took the form of law, when an act was passed called the statute of apprenticeship. At this time in England, trades were incorporated and called Universities. Our present term University was taken from these incorporated trades, and the term of years during which it was necessary to study, in order to obtain the degree of Master of Arts, appears evidently to have been copied from the term of apprenticeship in common trades. The ordinary time of service with most of the trades was seven years, on the Continent as well as in England, although this time varied in some localities, as in Paris it was five years. After the term of service as apprentice was fulfilled, the apprentice became a journeyman, and was obliged to serve five or seven years more, upon stated wages, as the companion of his master, this term being called his companionship. All this course of training was necessary in order for a person legally to pursue his trade or art upon his own account. The object of these incorporated trades was to lessen the number engaged in the business, and to avoid competition, while the avowed object was to produce a higher grade of talent and art.

The practical working of these laws proved to be injurious and useless, discouraging to the apprentice, restricting the supply of manufactured articles, consequently increasing the price, disturbing commercial values, and otherwise injuring and affecting trade. The tendency and operation of these laws also was to form trades-union for mutual protection, and powerful monopolies, giving rise to strikes, closing of manufactories, and inculcating idleness, poverty, and vice. They therefore became unpopular, and no encouragement was given to prosecutions upon this statute; in fact, so dangerous and fatal were the evils of such combinations and conspiracies, especially among journeymen, that the common law came to abhor all monopolies which prohibit any one from working in any lawful trade. The highest legal authorities in England argued that it was much better that all should begin as journeymen, and be paid for their services according to the value, and "if any one takes upon himself to work, and spoils it, an action on the case lies against him." After a great deal of legislation upon apprenticeship and against

combinations, it became at length a settled conviction that trade should be as free as the air we breathe.

The term apprentice means one who is bound by covenant to serve a person for a certain definite time, with a view to learn his art, mystery, or occupation, in which his master is bound to instruct him. Apprentices are regularly bound by indentures. In this sense of the term, as obligatory, apprenticeship was abolished in France at the Revolution, and in England (except in London and some of the larger cities and towns), about the year 1814.

In this country, it was a common custom to regularly indenture apprentices after as well as before our Revolutionary War, and the custom ceased here about the time it did in England; it was found to work injuriously both to the apprentice and the master, for if the apprentice was not adapted to the trade, or did not like the trade or his master, he was sure either to run away, or to behave in such a manner that his master would drive him away or willingly cancel his indenture; and if the apprentice was unprofitable, or otherwise obnoxious to the master, he was sure to find some way to cancel the indenture.

After the system of binding apprentices by indenture ceased, custom established the practice of making an arrangement or bargain by which young people should serve some person as master or mistress for a definite term (with males, generally until they arrived at the age of twenty-one years), at some stated compensation, or the payment of some sum by the apprentice for the purpose of learning the art or mystery of the business, and this arrangement still goes by the name of apprenticeship, although at the present day it has nearly or quite degenerated into employing persons of almost any age, capacity, or qualification, by the year, month, week, or day, at stated wages for the estimated present value of the service to be rendered. Whether we like or dislike the present custom, whether it is profitable or unprofitable either to the master or apprentice, we must come to the conclusion that apprenticeship in this country is obsolete, and as it has existed in the past, will never be revived.

Should any employer doubt this statement, let him listen to

the daily conversation of employees in our business, and reflect upon it. The questions commonly asked are: What are you doing now? For whom do you work? What pay do you receive? Do you like there? Are you intending to stay? Is the work easy? and then talk with your neighboring employers and see who has just had one clerk leave him, and find out the reason why; and talk with another who wants a boy with two years' experience; and still another, who says that he will never employ any more boys.

If the above statements of the past and present condition of apprenticeship are correct, can we prognosticate what will be its future condition with reference to our profession?

During the past twenty-five years, the practice of medicine has undergone a great change. The competition in medical schools has graduated a great number of incompetent and badly-educated physicians, which has greatly lowered the standard of medical science, tending to bring a regular medical education into disrepute, while the eclectics, homœopathists, and other irregular practitioners have established legal schools, and have attained a legal standing and character as practitioners of medicine, and the apothecary business has been passing through a corresponding change; formerly, nostrums or proprietary articles were comparatively few and unimportant, while at the present time at least two-thirds in value of all medicines sold are in the shape of these so-called patent medicines (although none of them are patented), and now we have botanic, eclectic, homœopathic, and patent medicine stores and dispensaries for the sale of these specialties alone. In addition to this state of things, many apothecaries have paid attention to the sale of those articles which meet with ready sale, without the labor and care of preparation, which require very little scientific or artistic knowledge, and which yield a greater profit, and have taken and trained their assistants more with a view to their commercial tact than to pharmaceutical qualification; until now the real apothecary, with qualifications equal to the demand made upon him by an educated medical profession, is decidedly in the minority.

The public, through ignorance of the importance of a thorough

education and training, do not seem to require a better grade of apothecaries; young men prefer situations where less labor, study, care, and responsibility are required, and where at first the allurements of ease and commercial transactions, and present profit outweigh the prospective rewards of science, and thorough professional knowledge and usefulness.

To these causes we must attribute the superficial qualification of so great a majority of those now engaged in the business, and to remedy these evils we should be more careful in the selection of young men to learn the business. Young men should be selected who have had a good English education, with some knowledge of the Latin language, and if they possess some knowledge of the French and German languages it would be all the better; they should be careful, accurate, reliable, thoroughly honest and persevering, and should enter the business with a view of perfecting themselves in it; they should be between sixteen and seventeen years of age, and should not be engaged for a less term than four years. In all cases where schools of pharmacy are accessible, it should be stipulated that a part of their compensation should be a course of study and training in such school, to be paid for by the employer. The attendance at such school should commence during the second or third year of their engagement, so that the pupil may have some knowledge of drugs before entering the school, and so that he may be able to graduate in the fourth year. The first year should be a trial year, to test the adaptability of the youth for the business, and if it was found that he was averse to going through a thorough theoretical and practical training to enable him to attain to the degree of Graduate in Pharmacy, or if from any cause he was not adapted to the business, and would not be likely to become an accomplished pharmacist, he should be dissuaded from pursuing it.

In all cases where schools of pharmacy are inaccessible, some provision should be made for such attendance, to enable every pupil to become a graduate; and no young man should enter the business unless with a view of becoming a graduate.

With a view of offering greater inducements to young men,

employers, whenever it is practicable, should employ porters, or errand boys who intend to become porters, to do a certain amount of labor, instead of having the same work performed by a greater number of apprentices, thus affording more time and a better opportunity for the apprentice to become proficient, and at the same time, be equally remunerative to the master.

With reference to the preceptorship of the master, he should feel it a duty to be able to instruct in all the details of the store and laboratory, and this should extend to the minutiæ of every operation of manufacturing and dispensing, as well as the commercial principles and practice. In the laboratory the apprentice should be instructed in and required to observe strictly all the general principles of exactness, cleanliness, and honesty; he should be required to work all formulæ with exactness, observing every condition of detail; he should be instructed in the quality of every article he uses, and the most economical way of treating it; all doubts should be solved, and in every experiment, operations should be conducted with a view to definite results. The apprentice should be instructed practically and thoroughly in such things as weights, measures, temperature, specific gravity, and the way in which these things affect combinations; he should be instructed in the principles, as well as the practice of percolation, digestion, filtration, evaporation, distillation, &c., with a view to exact results. In dispensing, he should be instructed in detail with reference to every article; the form and style of every package should be made to conform to correct taste, perfect safety, and the greatest convenience. With reference to quality, as regards remedial agents, he should be instructed to recognize fully the standard authority of the Pharmacopœia, and with reference to economy or cheapness, in every commercial article or commercial transaction he should be made fully to understand that the cheapest article is that which, in comparison to another, would do the greatest amount of good, or yield the greatest results for the least money, rather than that which would sell for the greatest profit. Having been instructed in these principles, to enable the apprentice to gain full confidence in himself, he should be so trained as to gain the

confidence of any person whom he may serve or wait upon, paying attention to all those little graces and amenities of life, which go to make up the gentleman, as well as the accomplished pharmacist.

Having attempted to show that apprenticeship by indenture is obsolete; that by practical experience apprenticeship as compulsory is not adapted to or in agreement with the democratic or republican institutions of the United States; that the popular sentiment of this country is for free trade and free labor, and against all monopolies; that laws restricting the practice of pharmacy and obligatory apprenticeship are unpopular with legislatures, and inoperative when enacted, we must come to the conclusion that some such system as is here proposed must come into use and become the best adapted to this country. It only remains to show what would be the variations from this custom, and what ought to be the custom in justice to all parties.

In the present state of pharmacy in this country, many of its practitioners are incompetent, from various causes, to properly educate a young man in the art and mystery of our business. These men must be supplied with clerks or assistants, and some provision should be made for the proper education of such assistants or apprentices, and they should be allowed to finish their education with some competent preceptor and graduate from some regular school of pharmacy; it should not, therefore, be considered wrong in every case for young men to leave their employers before the expiration of the four years' time, for the purpose of completing their education and graduating, nor should employers be censured in such cases for employing young men for a less term, if with a view to their being perfected in the business elsewhere, although the practice should be discountenanced as far as possible, as well as that of employers who persistently refuse either to leave the business or qualify themselves for its responsible duties. At present this state of things is regulated by competition, custom, or common usage, and will probably so continue to be regulated, however much we may wish it otherwise.

After as full a consideration of the subject as I have been

able to give, I am still unable to propose a general plan to cover all cases, and feel obliged to leave it, with such recommendations as this paper contains, to the good sense and judgment of each individual of our profession, with a view to the best good of the public, and the best interest and greatest professional advancement of the apprentice.

PHARMACEUTICAL EDUCATION.

BY A. B. PRESCOTT,

Professor of Organic Chemistry and Pharmacy in the University of Michigan.

THE conditions of pharmaceutical apprenticeship in this country, constitute a subject of regret to all thoughtful observers. But no class of people are less subject to *idle* regret than are men of science, and as such, pharmacists will not rest easy without efforts to improve those conditions which shape the character of their vocation at its source.

In a large number of instances, the apprentice is led to perform mechanical labor in blind ignorance of the nature of the material with which he deals; he becomes habituated to a feeble and automatic mode of action, and hence, too often, he never afterward breaks through to the light. Elementary text-books on chemistry and botany are not placed in his hands; he learns to refer to official and non-official authorities, and to follow after statements and methods which he does not understand; and, too often, he finally ceases to "wonder why" he does this or that. The history of processes of preparation, and the discussion of physical and chemical ways and means are in a tongue unknown to him.

In many instances, this condition of things may be remedied by the pharmacists having apprentices in charge, but in this country and at present, in a *far larger* number of instances, such remedy is impossible, because the pharmacist has little more science than his apprentice. He also was a blind apprentice, if he was an apprentice at all, and he is too often unconscious or regardless of his own deficiencies. In the larger

number of drug stores there are no orderly facilities for the application of chemical and physical tests. Where even a chemist could find but imperfect means for the testing of medicines, the apprentice often completes his term in ignorance of those simple but very important tests which might be made in any drug store, or he may make empirical and fallacious attempts in obedience to directions not understood. From this apprenticeship, the young man emerges into responsible dealing in a trade abounding in adulterations and substitutions, low standards and shrewd deceptions. From this beginning, year after year still leaves him at the mercy of wholesale deceptions, innocent of the wrong done under his hand, if we may term him innocent whose ignorance places human life in daily jeopardy.

In Germany, the state requires and regulates apprenticeship, enforces instructions during the same, and secures the scientific character and the efficiency of such instruction by official examinations; and the same fact is true, to a certain extent, in Great Britain. It is evident that before we can hope for such apprenticeship, we must obtain a new generation of competent masters by some other means.

There is now a general demand for school training in technical science for all young men who are to enter upon vocations requiring applications of science: engineers, miners, manufacturers, mechanics, agriculturists, and (shall they be named at the last?) pharmacists. Every year this demand is notably more imperative. This education, of inestimable advantage to the pharmacist *whenever* obtained, is certainly never more useful than when secured *before* apprenticeship. This is the logical order; first principles, and then their applications. It is true that from *didactic* college instruction only, the principles of science are feebly apprehended, and especially in physical and chemical science, but vague and evanescent ideas are likely to be obtained by lectures alone. But, as we have just seen, it is not in the shop that the conditions of practical study are to be found at present; indeed, such conditions never can be so perfectly furnished in the shop as in the school laboratory. And it is the growing conviction of thoughtful educators, that physi-

cal science must be, and *is to be taught in college laboratories.* The student must handle the materials and wield the forces of physical and chemical action before he obtains a clear acquaintance with the same. And it is more than knowledge of natural forces, it is the skill to guide those forces that constitutes power, and such skill is best acquired in school laboratories. Moreover, the mental and manual discipline of laboratory science-work under the teacher, the training in care and accuracy imperative thereto, is excelled by no other discipline for the perceptive, inductive, and executive faculties, and it is discipline especially useful in the vocation of pharmacy. Such laboratory work ought not to be briefly completed; the broad field of pharmacy, reaching far into the sciences of inorganic and organic nature, require years of pupilage. A preparation that is to give ability, interest and good success to the lifetime should not have its opportunities too grudgingly counted in months.

But it may be urged, will young men who have taken and graduated from college courses in technical science, be willing to enter into the drudgery of apprenticeship in the shop of the apothecary, there to learn those practical details of daily duty and sale, which every one admits can be better learned in the shop; indeed, cannot be learned elsewhere? The question has its parallels. Farmers and mechanics cry out with fear, that too much school education of any sort may lift their sons above their vocations. It is a question asked at thousands of firesides, but the world is full of answers,—there is no danger of too much schooling. To look at the industrial and national progress of Germany, is to receive a full answer.

It belongs to right education to fit men in heart, as well as in head and in hand, for the practical pursuits of life. If college bred, aye, and college graduated men feel above the work at the foot of the ladders of industry, then their feeling needs to be corrected, and their teachers in college and their elders in industrial art in community should join in curing them of this false pride. That young man whose knowledge of science breeds contempt of handicraft, has but poorly learned science, and has missed its true enthusiasm.

The objection to college graduation before apprenticeship, is constantly being made in the polytechnic vocations, and as constantly overcome; but in no vocation is there so good ground to silence the objection as in pharmacy. It is precisely to the *ignorant* apprentice in pharmacy that its work is drudgery. Too many of our apprentices have not taken that step which the world has taken in little more than a generation,—the step from dreary charm-dealing to scientific pharmacy. Give them first the fundamental sciences, and the daily duties of apprenticeship become invested with constant interest. The soiling of hands and dusting of garments they will regard no more than the literary writer regards the inkstain on his fingers. If a task, it is but probation for an honorable vocation in science, the significance of which the apprentice sees everywhere before him. Many duties are but experiments and verifications of principles ascertained, and operations studied at the school laboratory. He sees the chemical reactions going on under the hands of his elders with interest, but without the presumptuous confidence of the uninformed. Having more self-respect, certainly, than the untaught, he is not more "above his business," for his business is higher in his estimation. He knows the long line of noble men whose master minds and patient labors have been devoted to the elucidation of every substance and every operation with which he has to deal. And in the after-life of responsible business he is not in danger of being victimized by the confidence operations of the drug trade.

All the schools of pharmacy which have been recognized as such by this Association require the completion of apprenticeship before granting a college diploma. In so doing, these colleges, in addition to their function as educators, perform a useful office in the discrimination and indorsement of certificates of apprenticeship, and in regulation of pharmacy. But, the writer submits, it is greatly to be regretted that no one of the colleges of pharmacy which this Association represents has ever required college laboratory training, either before apprenticeship or before college graduation. This regret is expressed with no lack of appreciation of the useful services which these colleges have per-

formed in keeping pharmacy alive in this country. And also, it is to be regretted that our institutions of science have not, more generally, organized courses of science applied to pharmacy. A young man can obtain the fragments of pharmaceutical science at many institutions, but in so doing he must be the constructor of his own education, and he loses those inestimable advantages which arise from the illustration and application of sciences, even in their rudiments, toward that profession they are designed to benefit. He also misses the professional enthusiasm and stimulus due to the incitement of a professional college fellowship.

Concerning the qualifications of English, German, and general education, which ought to precede apprenticeship, the writer forbears to enter, but would express his sense of the importance and indeed inherent necessity of such requirements. General education may properly be included in that of the technical school.

September 14, 1871.

PHARMACY IN CANADA.

BY W. SAUNDERS, LONDON, ONTARIO, CANADA.

At the last meeting of this Association, in Baltimore, I was placed on the committee appointed to report on the "progress of pharmacy" during the past year. Occupying this position, it was expected that I would furnish the chairman of the committee with such suitable material as I could gather relating to the progress of our chosen art within the "Dominion." On reflection it appeared to me that such matter must necessarily be, to some extent, retrospective, embracing something of the history of pharmacy, as well as its recent progress in this portion of our continent, and deeming this unsuitable to form a portion of the regular yearly report, I wish to present it in the form of a volunteer paper.

The practice of the art of pharmacy in Canada was early placed under legal restrictions, the first law regulating it having been passed during the latter part of the last century, in the

province of Lower Canada, or as it is now called, Quebec. Its object was to guarantee some amount of qualification in the dispensers of medicine, and the law remained unaltered until about 1863. Under its provisions application was made to the governor of the province for a license to practice, whereupon he was bound to appoint a board to examine the applicant, and on receipt of their certificate, issued the license. The examiners were generally medical men, and the examination was probably rather superficial. It is well known that a gentleman now living nearly failed to obtain his certificate because he insisted on the fact that castor oil was soluble in alcohol.

In 1847 the "College of Physicians and Surgeons" of Lower Canada became incorporated, and it was then proposed by them that the druggists should also be under the control of the College. This pretension, however, was finally withdrawn on the understanding that the druggists should incorporate themselves for a similar purpose, but there were very few of them then in Lower Canada, and a want of *esprit de corps* caused the matter to be neglected. In consequence of this neglect, several attempts were made during the next few years to bring them under the sway of the medical body, which was always stoutly resisted by the pharmacists; but finally a short act was quietly hurried through Parliament in 1863 or 1864 without their being aware of it till too late, transferring the power of issuing licenses for the practice of pharmacy from the Governor-General to the College of Physicians and Surgeons, who thus became the regulators of the course of study and the examining body. Most of the existing druggists in the city of Quebec hold this license, but in Montreal it has been pretty generally ignored, and we believe the College would have some difficulty in enforcing its prerogative. This anomalous and unsatisfactory position, however, roused the pharmacists from their apathy, and in 1867 the "Montreal Chemists' Association" was founded, as a society for mutual instruction and for promoting the education of the young men and advancing the general interests of the body.

During the first year, the efforts of the Society were chiefly confined to the holding of monthly meetings during the winter

season for the reading of papers and for discussions, at some of which Dr. Sterris Hunt, of the Geological Survey, was present. Dr. Girdwood and Dr. J. Baker Edwards, both well known for their scientific attainments, were also active members, and contributed much to the interest of the meetings.

In the second year, the Society established lectures in chemistry and materia medica, a liberal subscription having been taken up as a guarantee fund. A class of from thirty to forty attended these lectures, which have ever since been sustained. The number of students attending last session were twenty-five for chemistry and thirty-two for materia medica.

In response to an invitation, the Montreal Chemists' Association sent delegates to the meeting of the American Pharmaceutical Association, which was held in Philadelphia in 1868 ; it was ably represented by Dr. J. Baker Edwards and Mr. N. Mercer.

During 1869 the Association applied to the legislature for an act of incorporation, embracing powers to examine and the issue of licenses to practice, and the general control of the trade; but the opposition of the medical faculty was too strong, and the act was withdrawn. Last season an act was applied for with permissive powers merely, leaving the license question where it was, and this has since become law.

Under the provisions of this bill, the members of the "Montreal Chemists' Association" became a corporate body, under the name of the "Pharmaceutical Association of the Province of Quebec," all chemists and druggists in business prior to the passing of the act being also eligible to membership if desiring it, without examination; but future members must pass an examination in such subjects as the Council shall deem proper, unless such persons hold a license from the College of Physicians and Surgeons, which exempts them from further examination. The membership, which is thus purely voluntary, embraces two classes, known as *members* and *associates*, the former consisting chiefly of the proprietors of drug stores, the latter of clerks and apprentices. Members pay an annual fee of five dollars, and associates two dollars, thus supplying the necessary funds for carrying on the operations of the Association. The membership

at present is somewhat over one hundred. The act referred to does not give the pharmacists the power they want, to enforce proper qualifications by a strict examination of candidates, but it is hoped that the power already granted will, if judiciously used, lead to an extension in that direction, with entire control of the pharmaceutical examinations by the Association.

In the province of Ontario, formerly known as Upper Canada, there has been but little legislation in reference to pharmaceutical matters until the present year. A poisons bill was passed several years since which provided that no druggist should sell certain articles mentioned in the act, or any other drugs commonly known as poisons, to any person, under a penalty of fifty dollars, unless the purchaser produced a certificate from a physician, magistrate, or minister, declaring that he was a fit and proper person to be trusted with the same. Although the fine has in several instances been inflicted, yet in most portions of the province the law has been but little regarded; for it was felt that the druggist himself was, in most instances, far better able to judge as to whether the applicant could be safely trusted with poison than either a magistrate or a minister.

In the early part of 1867 the Ontario Medical Council sought to introduce a bill into Parliament, which provided that druggists should be compelled to attend lectures at one of the medical schools, and before commencing business pass an examination before a board composed exclusively of doctors. On the proposition of this unjust measure, meetings were held simultaneously by the druggists of Ottawa and Toronto, at which resolutions of the strongest disapprobation were passed, and which resulted in the formation of local societies in each of these cities for the purpose of opposing the measure, and by united effort securing and maintaining the rights and privileges of self-government. The necessity of examination was not disputed, but the manner in which it was proposed to be carried on was objectionable, and while fully recognizing the intimate relationship existing between the physician and pharmacist, it was held to be a very different one from that which distinguishes master and servant.

In May, 1867, the first meeting was held in Toronto, and a

society then formed under the title of the "Toronto Chemists' and Druggists' Association." At a second meeting held in June, the name was changed to that of the "Toronto Pharmaceutical Society." The meetings were held monthly, and after a short time it was thought that the Society might become more cosmopolitan in its character, and extend its membership and influence to other parts of the Dominion, and thus unite the whole body of pharmacists in a common bond of fellowship, and through their combined influence seek to obtain those legislative enactments which a local society might fail to secure. With this view, the name was again changed to that of the "Canadian Pharmaceutical Society." Invitations were sent to the Ottawa Society to join, to which that body cordially responded by sending in a list of their members with the requisite fees. In response to circulars issued to the trade throughout the province many became members of the new Society.

At a meeting in March, 1868, it was proposed to issue a monthly periodical in the interests of the trade, Mr. E. B. Shuttleworth, of Toronto, being appointed editor, and in May the first number of the "Canadian Pharmaceutical Journal" made its appearance. The immediate effect of its issue was a large increase of membership, which in a few months numbered about three hundred, embracing nearly all the influential druggists of the province.

The Journal has ever since been regularly issued, and under the able management of Mr. Shuttleworth, aided by an editing committee, has done much to induce united effort on the part of the members, and in other ways further the interests of the pharmaceutical body. With the August number of the present year begins a new series, in which the form and arrangement is greatly improved; the size is reduced to the more convenient and readable form of octavo, while the number of pages is considerably increased.

During the winters of 1868 and 1869, efforts were made to furnish means of education to young pharmacists by employing lecturers in chemistry and pharmaceutical chemistry. Lectures were given two evenings a week, but during the second winter

the attendance was small, and since then the lectures have not been continued.

The efforts of the Society were next directed towards legislation, and a bill was introduced into the legislature on the model of that of Great Britain. This obtained a first reading in January, 1869; but there was much resistance made to its further progress, and it was deferred from time to time. The Society still persisted in urging the bill on the house, and after considerable discussion and some amendments, it ultimately became law on the 15th of February, 1871.

Under the provisions of this act, the leading pharmacists of Ontario are constituted a body politic and corporate under the name of the "Ontario College of Pharmacy." All druggists are required to be registered, and to pay a registration fee of four dollars annually to the registrar, for the uses of the College. Those who were in business prior to the passing of the act, or who may have before that time served an apprenticeship of three years, and acted as druggist's assistant for one year, are entitled to be registered without examination; but all others must qualify by passing such an examination as may be prescribed by the Council of the College. The Council are elected by the members of the College to hold office for two years, and are eligible for re-election. They are required to hold two sittings annually for the purpose of granting certificates of competency. Every person registered is entitled to receive a certificate under the seal of the College, which certificate must be displayed in a conspicuous position in his place of business.

With regard to the sale of poisons, it is required that all the most dangerous articles, of which a list is given, be distinctly labelled with the name of the drug and the word *poison*, with the name and address of the proprietor of the store where the purchase is made, and that all those articles in the first part of the list shall not be sold to any person unknown to the seller, unless introduced by some person known to him, and on every sale of such poison, the person selling the same shall, before delivery, make an entry in a book to be kept for that purpose, in a certain given form, stating date, name, and address of pur-

chaser, name and quantity of the article sold, the purpose for which it is said to be required, the name of the person, if any, introducing the buyer, and to which the signature of the purchaser must be affixed.

Any person transgressing any of the provisions of this act, is liable for the first offence to a penalty not exceeding twenty dollars and costs, and for each subsequent offence a penalty not exceeding fifty dollars and costs, to be recovered in a summary manner before any two justices of the peace or police magistrate on the oath of one or more credible witnesses, one-half the fines to belong to the prosecutor. It is incumbent on the defendant in such cases to prove that he is entitled to sell or keep open shop for compounding medicines, &c., by producing his certificate of registration. It is provided, however, for the benefit of the medical profession, that nothing in this act shall prevent any member of the College of Physicians and Surgeons of Ontario from carrying on the business of a chemist or druggist without registration.

A provisional council was named in the act, which held its first regular meeting on the 5th of July, when officers were appointed, a code of by-laws adopted, and arrangements made for the examination of candidates, and the continuance of the Journal. The subject of education was discussed and its desirability admitted by all, but in consequence of the limited amount of funds at the disposal of the College, no immediate action was taken. The meeting was a very harmonious one, all the members cordially laboring together for the general good. The Board of Examiners appointed by the Council held their first sitting on the first Wednesday in August, when five candidates were examined, three of whom were successful in obtaining certificates of competency.

It is intended, as soon as sufficient funds are at the disposal of the College, to establish some regular and permanent educational measures. A museum has also been established, which is already enriched by some rare products and preparations.

The progress of pharmacy in Canada, as shown in the résumé we have given, is, we think, encouraging, and promises well for

the future. True, the great majority of druggists there, as elsewhere, look upon their profession too much from a money point of view, esteeming it but little for its own sake, still we have some, and their numbers are increasing, who have been and still are striving to infuse a higher and a nobler spirit into their fellow-laborers, and their work is being crowned with a measure of success. Our young men usually serve a regular apprenticeship of three or four years to their business, during which time most of them become fairly competent, which competence is recognized throughout this continent, and shown in the readiness with which applicants for situations from Canada are employed. In chemical and pharmaceutical manufactures we are also making advances. But a few years since a large proportion of such preparations as required skill in their manufacture were supplied either from England or the United States, now many of such are made within the provinces. These and other indications of solidity and progress point, we trust, to a brighter future for pharmacy and pharmacists in Canada.

I regret that I am unable at present to bring before you anything relating to the progress of pharmacy in the other provinces of the Dominion, Nova Scotia and New Brunswick; possibly before the next annual gathering of this Association, some matters of interest relating to these sister provinces may be obtained.

PRECAUTIONS IN DISPENSING POISONS.

BY WILLIAM C. BAKES, OF PHILADELPHIA.

QUERY 23.—What are the best containers, or what other precautions can be devised for poisonous drugs, to lessen their liability to mistakes in dispensing or handling them.

THIS is a topic upon which much might be written, and even then the conclusions arrived at might not seem satisfactory. It must be conceded that the ordinary methods of keeping and dispensing poisons are liable to much criticism. In these times when there is so much *free trade* in medicine; when any man

however ignorant and unskilled, is privileged to practice medicine, or deal in drugs, it is of the greatest importance that some safeguards should be thrown around the storage as well as dispensing of poisons. In some states, laws have been enacted regulating the sale of poisons. Some years since the legislature of Pennsylvania passed a law requiring that all parties selling poisons should keep a record of the date of sale, name and address of each purchaser, with the quantity of the article sold. This law is scarcely regarded, and the existence of it may not be known to many in the profession. State laws, however wisely framed, will not prevent accidental poisoning, and education is not always an absolute security against errors in dispensing. A temporary alienation of the mind has often caused serious errors in compounding prescriptions, even with those well skilled in their profession. It should, therefore, be our aim to have all potent medicines so guarded, and their dispensing so regulated, that the liability to error would be greatly lessened, if not altogether prevented. Having given the subject much careful consideration, I have adopted the following precautions in my own establishment:

1. All bottles on the shelves containing such substances as tincture of aconite root, tincture of digitalis, Fowler's solution, tincture of opium, tartar emetic, bichloride of mercury, &c., are of blue glass, with a red caution label on the back of each bottle.

2. Extracts of aconite, belladonna, nux vomica, opium, digitalis, &c., are contained in the ordinary jars properly labelled, and then inclosed in a tin can, also labelled with red letters painted on the tin.

3. The powerful alkaloids, as strychnia, veratria, atropia, morphia, and such articles as arsenic, hydrocyanic acid, &c., are kept in their original bottles, in a closet under lock and key, and when dispensed, the assistant dispensing calls another to witness that the article and quantity dispensed corresponds with the prescription; a note is taken by whom the prescription was *vised*.

This plan strictly adhered to, furnishes an efficient safeguard,

and is attended with so little trouble, that it may be readily adopted in every store.

All my labels for poisonous drugs, liniments, and medicines for external applications, are printed on bright red paper, some of which have a *sanded* border. The object of this is that even in the dark, by the sense of touch they may be distinguished from other labels, whilst their color and peculiar appearance in daytime will render them conspicuous.

The sanding of the labels is attended with some trouble, and I find it necessary to do it in the store; but nothing should be considered too troublesome that will guard human life from the possibility of accidents in the dispensing of medicines. Labels may be sanded by covering the part to be sanded with thick elm water, and then dusting over it No. 1 flint sand, and allowing them to dry.

Bottles of various colors have been used for dispensing poisonous medicines, and preparations for external application, but the shape has always corresponded with those of white glass, and the distinction has not been sufficiently marked. I have used for medicines for external use, a three-sided black glass bottle, which has answered an excellent purpose. I have improved on this by having on each side a number of small projections, and having the bottles of transparent blue glass. This will render them totally unlike any other bottle in use, and even in the dark they cannot be mistaken for another bottle. A leading firm—manufacturers of glassware—will soon be ready to supply these bottles to the trade, and I think they will be appreciated by pharmaceutists, as a valuable addition to the dispensing department, and secure a corresponding appreciation from the public, as an effectual means of protecting them from accidental poisoning. The contrast of the bright red label on this singular-shaped bottle is very conspicuous, and carries with it a caution which will not fail to arrest attention.

ON THE EFFECTS OF GLYCERIN IN PHARMACEUTICAL PREPARATIONS.

BY W. J. M. GORDON, CINCINNATI.

It has been proposed to substitute glycerin for sugar as a solvent and antiseptic in fluid extracts. Does this ingredient in quantity affect their medicinal power in any way?

Glycerin has attracted so much attention for many years, its uses have been so numerous, and its properties have been so much discussed, that it would appear at first sight to be difficult to say anything new in relation to it, but the more its extraordinary properties are investigated, the greater are the uses it seems specially adapted to. Fluid extracts, also, are a class of preparations of great popularity, and seem to be extending to almost every vegetable medicinal substance, and but comparatively few of the number now in use have an officinal formula, and in many of these an improvement no doubt can be made. It is important then to investigate and reach a conclusion as to the best method of preparing them, and the most efficient menstruum for extracting their medicinal properties and giving them permanency.

The advantages in substituting glycerin for sugar as a solvent and antiseptic can scarcely admit of a doubt. Its wonderful solvent properties of the extractive matter of vegetable substances, and its extraordinary power of retaining them unaltered, are properties not possessed by sugar. Even the coloring matter and odor remain permanent, showing the great stability of preparations in which it is used; and no doubt fluid extracts made with it more nearly represent the natural combination as it exists in the drug. My experience in the use of glycerin in fluid extracts extends over a period of several years, and the assertions I make are based upon experience in its use.

In 1864, at the meeting of this Association, I called attention to its solvent and antiseptic properties in fluid extracts, and exhibited several in which it was used. Since that time I have employed it in the preparation of about two hundred and fifty different fluid extracts, and in every article I have found

it desirable, either in connection with alcohol as a solvent or as an antiseptic, and to retain the extractive matter in solution.

Fluid extracts, as a general rule, in which it is used become clear very soon, and but seldom show any deposit afterwards. The liability to precipitation in fluid extracts, made in the usual way, has been a source of great trouble to both manufacturers and dispensers, and in many articles a great length of time was necessary to entirely separate all the deposit; but with glycerin the extractive matter is held perfectly in solution, and elegant preparations are the result. It would take up much time, and forms no part of the answer to this query, to enter into the process for each article, or the quantity of glycerin used, but in a general way will say the proportion I have used varies from one-quarter to one-half of the fluid extract when finished.

Its antiseptic property is much greater than that of sugar, and it will not ferment in combination with extractive matter, and extracts made with it retain the characteristic odors of the substance from which they are made. I have before me a number of fluid extracts made with it, some of which have been made a long time. One particularly I will name, fluid extract of buchu, now about eighteen months old; this, you will find, has not the mint odor that this extract always acquires when made by the officinal formula.

My conclusions then may be summed up as follows:

First. It may be substituted for sugar, and is a substance that has no disturbing influence upon the system.

Second. It possesses properties that sugar does not, and is a better solvent of the active principles of vegetable substances.

Third. It prevents precipitation of organic matter from fluid extracts, particularly those containing tannin, as with the cinchonas and others, and gives them great stability.

Fourth. It is antiseptic to a greater extent than sugar; sugar with vegetable substances is apt to undergo fermentation, even when alcohol is present, and to decompose the alcohol as well, the preparation becoming sour. This is frequently the case with fluid extract sarsaparilla and others, also syrup squills, compound syrup senega, and syrup ipecac.

Glycerin is not prone to fermentation, and has but little if any effect upon the system, and no disturbing effect upon the most delicate stomach.

These points seem to cover the whole ground: that it may be used with the same impunity as sugar; it prevents change, holding permanently in solution the extractive of fluid extracts; that it has greater antiseptic properties than sugar, and will not ferment under the same conditions that sugar will.

From the above facts, it is evident that glycerin in no way affects the medicinal property of fluid extracts in which it is used, and for reasons given it is much the better material of the two.

ON POWDERED CAMPHOR.

BY JOHN C. LOWD.

QUERY 2.—How may Camphor be reduced to a fine powder, and retained in the pulverulent condition?

THE query on this subject having been referred to the writer, he hereby submits to your honorable body the result of an experiment.

The various methods for reducing camphor to a fine powder, suggested by different writers, are singularly deficient. The objections are the expense and incomplete results, through the moist condition of the powder when precipitated from an alcoholic solution, rendering it unavailable for the purposes for which it is largely employed in the manufacture of errhines, tooth powders, &c.

Camphor possesses the advantageous property of resublimation without losing any of its valuable qualities. This furnishes a suggestive hint capable of being carried out in the preparation of a fine powder. The method I have tried, with complete success, consists in vaporizing the camphor from a retort into a large chamber, and its collection in the form of a fine dry powder.

The apparatus used consists of a four-wick lamp, containing

one pint of alcohol; a copper retort four inches diameter by ten inches high, having a curved neck fourteen inches long and two inches diameter; a chamber or receiver made of strong paper, rendered impervious by any suitable sizing. The paper is stretched upon a light frame of wood, so as to form a cubical chamber of three feet in length, breadth, and height, with an aperture on one side within a foot of the top, in order to receive the neck of the retort. Care must be taken to lute around the joint where the retort connects with the receiver on account of the inflammability of the vapor. The quantity used is one pound of camphor, and the time required to sublime it about thirty minutes.

The advantages of this process are its availability and economy, the perfect condition of the powder as to its purity, dryness, and degree of fineness. It will retain its pulverulent condition if kept in full bottles, well corked, in a cool place.

43 Temple Place, Boston, Mass.

ON MEDICATED WATERS.

BY SAMUEL A. D. SHEPPARD.

To answer this query, numerous experiments were made with the following substances: powdered glass, powdered pumice, kaolin or porcelain earth, finely pulverized silica, and carbonate of magnesia.

The oils of peppermint and cinnamon were selected, and many samples of medicated waters were carefully prepared with each of the above-mentioned articles, glass, pumice, &c., varying the quantities at times, but as a rule using the same weight precisely in each experiment.

It was found that the water made by the use of carbonate of magnesia was more highly aromatic than the others. Those made by the use of finely pulverized silica came next in order, and in some instances of very careful manipulation, the product

might be said to equal that made with magnesia. The waters made with kaolin, glass, and pumice were not satisfactory.

The question is, "What substance can be substituted for carbonate of magnesia that will furnish a water free from foreign matter?"

An article by Prof. Maisch, in the American Journal of Pharmacy, July, 1871, shows the importance of the subject.

Prof. Maisch takes the ground that distilled waters should be substituted for those made from the essential oils.

Distilled medicated waters are, doubtless, satisfactory vehicles for the administration of morphia, &c., but they are not easily prepared by ordinary pharmacists, and the experience of the writer from such experiments as he has made is, that medicated waters made by the use of finely pulverized silica answer the purpose in every way.

The silica is perfectly insoluble in water, and solutions of morphia salts, nitrate of silver, and corrosive sublimate (made by using medicated water by the use of silica) remain unchanged.

Silica is cheap, easily obtained, and would seem to be in every way the substitute for which we are seeking.

This subject, however, is not a new one. The London College adopted the use of silica in its Pharmacopœia of 1851.

The question at once arises, if silica be so valuable a substance in the preparation of medicated waters, why is it not used in the British Pharmacopœia, for there certainly must have been members of the London College who had made a practice of using silica, among the compilers of the new National Pharmacopœia.

This question the writer cannot answer, but is daily expecting to have answered by the secretary of the London College, to whom he has written on the subject.

ON AROMATIC SULPHURIC ACID.

BY THOMAS DOLIBER, OF BOSTON.

QUERY 29.—The Aromatic Sulphuric Acid of the United States Pharmacopœia is objectionable, in that it deposits upon standing, and when diluted with water, resinous and coloring matter separates. How can the formula be modified to overcome these objections?

THE slightest modification I have to suggest is to submit the ginger and cinnamon to the action of the mixture of sulphuric acid and alcohol. One pint of aromatic sulphuric acid was made by the process of maceration, using the quantities of materials ordered in the United States Pharmacopœia. After standing three months, a very slight incrustation had formed upon the bottom of the bottle, and from which the preparation was decanted clear. Aromatic sulphuric acid made by this process will not deposit objectionably upon standing; but it cannot be mixed with water without resulting in the separation of resinous and coloring matter. It therefore overcomes the first objection of the query, but not the second.

Of the great number of variations and modifications of the formula for Mynsicht's Acid Elixir, almost all agree in submitting the aromatics to the action of the acid and alcohol. This was the case with the formula for aromatic sulphuric acid in the United States Pharmacopœia of 1820, of 1830, and of 1840; but in that of 1850 it was changed to its present form.

Experiments were tried with several aromatics, viz.: Bark of sassafras root, bitter orange peel, calamus, cardamom, cloves, coriander, lavender, nutmeg, and pimento. These were each submitted separately to the action of a mixture of alcohol and sulphuric acid in the proportion of the officinal formula for aromatic sulphuric acid; the tincture thus obtained was mixed with water. In the cases of cardamom and lavender no precipitate was observed; in those of orange-peel and pimento it was very slight; in the remainder, the separation of resinous, oily, or coloring matter was so great as to render them improper substitutes for either of the aromatics in aromatic sulphuric acid. Besides, the substitution of any different aromatics for those pre-

scribed by the formula could hardly be regarded as a modification. Should, however, such an alteration be desirable, the formula of Mr. John H. Ehrman may be found useful.*

The substitution of the oil of cinnamon for the bark was also tried. This has been previously recommended by Mr. Thomas N. Jamieson,† whose formula does not seem to be based upon that of the United States Pharmacopœia, as the quantities of the materials do not agree with those of the officinal formula. Mr. Benjamin Campbell, of Uniontown, Pa., has also experimented upon this preparation, and offered me the results of his experience in substituting the oil of cinnamon for the bark.

The United States Dispensatory gives the yield of oil of cinnamon as eight ounces from eighty pounds, or .67 per cent.; the quantity of cinnamon in the formula is 720 grains, .67 per cent. of which is about $4\frac{3}{4}$ grains; it was, however, thought advisable to substitute 6 minims of oil for the 720 grains of bark. The following formula was accordingly devised:

Take of—

Sulphuric Acid, ...	6 troy ounces.
Ginger, in fine powder, ...	1 " ounce.
Oil of Cinnamon, ...	6 minims.
Alcohol, a sufficient quantity.	

Add the acid gradually to two pints of alcohol, allow the mixture to cool, and add the oil of cinnamon; moisten the ginger with two fluid drachms of the mixture, pack it firmly in a conical glass percolator and pour on the remainder of the mixture; when this has all passed below the surface pour on alcohol until the percolate measures two pints and three fluid ounces. It can also be prepared extemporaneously by using four fluid ounces of tincture of ginger instead of one ounce of ginger and four fluid ounces of the alcohol.

Aromatic sulphuric acid made by the above formula, after standing four months, showed the merest trace of sediment from

* The Pharmacist, Chicago, January, 1871, vol. 4, No. 1, p. 1. See also Amer. Journ. Pharmacy, March, 1871, 4th series, vol. 1, No. 3, p. 123, and footnote p. 124.

† Amer. Journ. Pharmacy, May, 1867, 3d series, vol. 15, p. 201.

which it was then decanted; the decanted portion, after standing three months more, remained entirely clear.

The substitution of oleoresin of ginger for ginger was also tried; but the result was unfavorable, the preparation producing a much less satisfactory mixture with water than that made by the above formula.

First Trial.—Aromatic sulphuric acid was mixed with water in the proportion of one fluid drachm of acid to one fluid ounce of water.

A, that of the United States Pharmacopœia.

B, that made by the above formula.

A became immediately turbid, and in a few minutes resinous and coloring matter separated, which after a short time settled, occupying about one-tenth of the whole space, leaving a perfectly clear and nearly colorless stratum of liquid above. *B* immediately became slightly turbid, but there was no precipitate; it remained a homogeneous mixture for several days; the taste and odor of the mixture from *B* was at least fully equal to that from *A*.

Second Trial.—Five grains of sulphate of quinia were dissolved in one fluid ounce of water by the aid of half a fluid drachm of aromatic sulphuric acid.

A, that of the United States Pharmacopœia.

B, that made by the above formula.

The results were similar to those in the first trial; *A* depositing a copious sediment, while in *B* no precipitate or sediment occurred.

There is another objection to the United States Pharmacopœia formula for aromatic sulphuric acid, which is not mentioned in the query, but which is thought to be of sufficient importance to be mentioned. The preparation is, to say the least, liable to be of uncertain strength of acid. It certainly will be so if made from chemically pure acid of lower specific gravity than 1.843, or if made from commercial acid of full specific gravity, but which contains lead. This objection is overcome in the formula of the British Pharmacopœia by the tests of specific gravity and titration; that is, the quantity of volumetric solution of soda is

given which is necessary to neutralize a given quantity of the acid.

Conclusion.—That the formula for aromatic sulphuric acid of the United States Pharmacopœia may be modified so as to overcome the first objection of the query, "that it deposits upon standing," by submitting the aromatics to the action of the mixed alcohol and acid.

That both objections of the query, "that it deposits upon standing," and "when diluted with water, resinous and coloring matter separates," may be overcome by substituting oil of cinnamon for cinnamon in the proportion of four minims or more of oil for one ounce of bark.

That another objection not mentioned in the query exists, viz.: its liability to variation in acid strength, which should be guarded against by adding to the formula the proper tests for the acid strength of the finished preparation.

Boston, July, 1871.

THE MORPHIA STRENGTH OF TINCTURE OF OPIUM.

BY L. M. RICE.

Query 22.—Is Tincture of Opium, as usually dispensed, uniform in morphia strength? What is the range covered by the differences existing in samples obtained from reputable sources?

As opium itself varies considerably in morphia strength, it is evident that the tincture must likewise vary in the same proportion from this cause alone.

Another cause for the variable quality of the tincture is found in the fact that it is made by many different methods. A few careful pharmacists follow closely the directions of the United States Pharmacopœia, and use the powdered drug in its preparation. Others either select dry lumps of opium, or dry them for the purpose. Others, and probably the greater number, use the drug as it appears in the market, and the greater or less proportion of moisture which it contains materially affects the strength of the tincture.

As the query is regarding the differences in the strength of the tincture when "obtained from reputable sources," the writer will not mention those who debase its quality by using less than the prescribed quantity of the drug in its preparation.

Of the twenty samples examined, thirteen are from New York City and Brooklyn; six from Chicago; and one is from Hartford, Conn. All are from pharmacists of recognized standing and respectability.

The method of assay, adopted after a trial of nearly all the morphio-metrical processes described in the books, was the Staples process, adapted to the assay of the tincture, instead of the drug. The writer would acknowledge his indebtedness to the excellent paper of Prof. Procter (Proceed., 1870, p. 129), and to suggestions from Dr. Squibb and Fred. Hoffmann, Ph.D. The assays have been made as follows: in most cases thirty grammes of the tincture were used for each assay, and when the sample was large enough two or three assays were made, and the averages taken. The tincture was first evaporated to one-half in a small capsule, by means of a water-bath to get rid of the alcohol. It was then set aside to allow the black tarry matter, which is soluble in alcohol but insoluble in water, to subside. After twenty-four hours the aqueous solution was poured off and filtered into a small wide-mouth vial. The black tarry precipitate was then mixed with ℥ij of distilled water, and poured upon the same filter. This substance is much more easily gotten rid of by subsidence than by filtration.

It is desirable to get rid of it, as it interferes with the precipitation of the morphia.

An equal bulk of alcohol (specific gravity .817) was now added to the clear liquor in the vial. Thirty minims of water of ammonia (specific gravity .935) mixed with thirty minims of alcohol was then added, with agitation. The vessel was closed with a cork and allowed to rest for (72) seventy-two hours.

The crystals of morphia were then detached from the bottom of the vial, the liquor agitated, and poured at intervals upon a small tared filter. The morphia remaining in the bottle was readily washed out by means of a small quantity of diluted al-

cohol, which served also to wash the morphia and filter. The morphia was then dried by a gentle heat, and weighed upon the filter.

The crystals were easily removed from the filter, and were weighed again separately, to verify the accuracy of the first weighing. (With the best Swedish filter-paper there was no difference between the two weighings, but inferior paper would gain in weight in spite of the most careful washing.)

The morphia was now washed upon the same filter, first with ℥j of chloroform and then with ℥ss. of sulphuric ether. The loss in weight after drying showed the quantity of narcotine present. As the latter crystallizes quite distinctly from the morphia, there is no difficulty in removing it by this method (Hager's).

The morphia from each assay is presented with this paper, and it is interesting to notice the difference in size and color of the crystals. The smaller and lighter colored ones formed much sooner than the larger and darker ones.

In a few cases the precipitation followed almost instantaneously upon the addition of the ammonia. In these cases the crystals are very fine and almost white.

The query is answered as follows:

Tincture of opium, as usually dispensed, is not uniform in morphia strength. The range covered by the differences existing in samples obtained from reputable sources, as shown by the annexed table, is from .056 to .120 per cent., or from 2.39 to 5.23 grains to the fluid ounce. In order to ascertain the proportion to the fluid ounce, the specific gravity of each sample was first taken. A fluid ounce of distilled water weighs, according to the United States standard, 455.62 grains. The weight of a fluid ounce of each sample was calculated from this data. The percentage of morphia being known, the proportion to the fluid ounce was then calculated.

Dr. Squibb makes his tincture of opium by assay to contain four grains of morphia to the fluid ounce = 10.6 per cent. of the opium (37.5 grains) employed. The U. S. Pharmacopœia directs that opium shall not contain *less* than 7 per cent. of

morphia. The latter standard would require the tincture to contain not less than 2.62 grains to the fluid ounce.

Of the twenty samples examined, only one falls below the standard, while nineteen are above it, and six are above the high standard first named. The average is 3.625 grains to the fluid ounce.

Assays of twenty samples of Tincture of Opium.

Number.	Quantity taken, grammes.	Specific gravity.	Morphia, grammes.	Narcotine, grammes.	Percentage of morphia.	Quantity to the fluid oz., grains.	Remarks.
1	30.	.953	.250	.060	0 083	3.61	From New York City.
2	30.	.952	.265	..080	0.088	3.82	" " "
3	30.	.952	.300	.090	0.100	4.33	" " "
4	25.	.952	.200	020	0.080	3.46	" Brooklyn.
5	25.	.952	.170	.020	0.076	3.29	" New York City.
6	30.	.938	.240	.040	0.080	3 41	" " "
7	29.20	.949	.290	.010	0.099	4.24	" Dr. Squibb.
8	30.	.959	.315	.060	0.120	5.23	Tr. Opii Simplex. Prussian Phar.
9	20.	.962	.130	.030	0 065	2.84	From New York City.
10	30.	.959	.230	.020	0.076	3.31	" " "
11	30.	.987	.300	.045	0.100	4.49	Tr. Opii Simplex. Prussian Phar.
12	30.	.957	.240	.030	0.080	3.48	From New York City.
13	30.	939	.170	.030	0.056	2.39	" " "
14	30.	.937	.190	.030	0.063	2.68	" Chicago.
15	30.	.943	.190	.010	0.063	2.60	" "
16	25.	.956	.195	.025	0.078	3.39	" "
17	30.	.949	.210	.040	0.070	3.02	" "
18	30.	.953	.300	.080	0.100	4.34	" "
19	25.	.956	.270	.015	0.108	4.70	" "
20	30.	.967	.265	.030	0.088	3.87	" Hartford, Conn.

ON THE PREPARATION OF SYRUPS WITHOUT HEAT.

BY L. ORYNSKI.

(Extract from a letter to the President.)

REGRETTING my inability to be present at the meeting, I send you some syrups prepared "via frigida" by percolation, which please, if you judge proper, present to the meeting of the American Pharmaceutical Association, together with the description of the method of preparation. From my personal experience I found that the syrups thus prepared will neither ferment nor crystallize.

The two-ounce bottle, with "*syrupus diacodion*," as ordinarily prepared, fermenting most readily, was made eighteen months ago, and only eight ounces put into a quart bottle. It has been so far kept unaltered.

All other samples are recently prepared, but they will afford an opportunity of judging of their qualities.

The syrups prepared according to the U. S. Pharmacopœia are too thin, and in my judgment do not contain sufficient sugar to withstand our summer temperature, particularly in the Southern States. Applying only "*a gentle heat*," fermentation on the slightest exposure to the air will take place.

If, on the contrary, the syrups are boiled (as the German and French Pharmacopœias recommend) without the aid of a saccharometer, the sugar may crystallize on account of over-boiling the syrup or evaporating it too much. One or the other way will meet with many obstacles, which can be removed by preparing all the medicinal syrups "via frigida," by percolation, which process is as follows:

"Introduce thirty or thirty-two ounces of sugar (according to the temperature) into a percolator in which previously has been introduced a piece of lint or sponge, well adjusted, and gradually pour on sixteen ounces of liquid so as to make the percolate (syrup) pass drop by drop. If the first liquid is turbid, pour it back into the percolator till the syrup *passes clear*."

Syrups thus made will keep very long and never crystallize. The syrupus scillæ comp. is prepared as follows:

"The roots are finely ground and macerated for twelve hours with as much diluted alcohol as they may absorb, then the tincture is obtained by percolation and evaporated to the consistence of a syrup. The extract thus obtained is mixed with a sufficient quantity of water, set aside till cool, and then filtered to separate all the albumen and other impurities. The liquid is now poured gradually into the percolator, in which the sugar has been previously introduced." The result, as the sample testifies, will be a syrup clear and pleasant to the eye. It will neither crystallize nor ferment.

The syrupus scillæ simplex is made from the squills not picked. It could be yet clearer if the squills are select white. The vinegar of squills for this syrup must be made several weeks previous, so that the albumen and other sediments which always are formed may be separated by filtering.

The syrupus pruni virgin. is made by macerating for an hour the bark with as much water as it may absorb, and then the percolation is followed in its usual way till the necessary quantity of liquid is obtained, which gradually must be added to the sugar introduced into a glass cover percolator.

The syrup of Tolu, No. 2, is made by slightly digesting the balsam in a water-bath; the liquid is filtered, and the syrup is prepared as above mentioned. This syrup is very cheap, and may be used in place of other pleasant aromatic syrups.

All the medicinal syrups, I think, may be prepared "via frigida," and, I am quite sure, would give satisfation to everybody.

The advantages of this process are:

First. The syrups are clear, and there is no necessity of purifying them.

Secondly. They possess their medicinal properties unaltered, since many drugs may be injured by heat, more especially aromatics and those containing readily volatile substances; and,

Thirdly. The syrups will neither crystallize nor ferment, and may be prepared in large quantity, provided the vessels or bottles are clean before filling them with syrup.

All the accompanying samples are of the strength of the U. S. Dispensatory.

I most earnestly recommend the process of "via frigida," by percolation, to my pharmaceutical brethren, and would respectfully ask the Pharmaceutical Association to recommend this process for general adoption.

HANNIBAL, Mo., September 10, 1871.

ON FLUID EXTRACT OF SENEGA.

BY H. N. RITTENHOUSE, OF PHILADELPHIA.

QUERY 36.—It is found that ordinary menstrua do not hold the polygalic acid of senega in solution, and that well-made fluid extracts of senega from good specimens of the drug are liable to gelatinize in cold weather. What menstruum is best adapted to use for holding all the active principles of senega in permanent solution, and excluding pectin and other useless substances?

THE tendency of fluid extract of senega to gelatinize in cold weather when made with the usual menstrua of alcohol and water, and in different proportions, is well known to pharmaceutists.

To find a means to overcome this tendency, and reply to the above query, a number of experiments were made by myself during last fall and winter, with finely ground senega and alcohol and water in various proportions, following the usual manipulations of the U. S. Pharmacopœia.

As none of the resulting preparations proved to be what was desired, the fluid extract presenting the handsomest appearance among the number, was selected to repeat the experiment, with the addition of an alkali. This extract was made with mixture of one part of alcohol to three parts of water, and contained less sediment than any of the others made in different proportions of alcohol and water; after pouring off the clear extract, it was divided into two equal portions; to one was added two per cent. of bicarb. soda of root used, causing an effervescence, which being over, the bottle was tightly corked and set aside

in a window, where it has been subjected to the coldest weather of the past winter, and now after standing eight months remains perfectly clear. The other half has thickened, though not so much as usual.

In view of the foregoing, the following is suggested as an improvement on the old method of making this preparation.

Take of —

Senega in coarse powder,	7680 grains.
Bicarb. Soda,	153 "
Alcohol, one part, Water, three parts,	32 oz., or q. s.

Mix thirty-two ounces of the alcohol and water, and dissolve the soda in it, moisten thoroughly the senega with this, and let it macerate in a covered vessel twenty-fours hours, transfer the mass to a percolator and displace twelve ounces, set this aside and continue the percolation with alcohol and water in the above proportions until the drug is exhausted, evaporate or distil this last portion until reduced to three fluid ounces, add one ounce of alcohol to this, and mix it with the reserved twelve ounces. Shake well this extract for a day or two at frequent intervals, and then decant or filter.

In my hands the above has given a very satisfactory fluid extract, a sample of which, that has been exposed to all the changes of temperature of the past six months, has shown no tendency at all to gelatinize, and has only deposited a very slight sediment.

NOTE ON FLUID EXTRACT OF SENEGA.

BY EDWARD R. SQUIBB, M.D.

THE officinal process for fluid extract of senega has, in the writer's hands, generally proved unsatisfactory. Occasionally a good stable preparation has been obtained, but this was so exceptional that it is now regarded as an accidental result of either defective senega root or a defective percolation. The more common result of the officinal process has been a speedy deposit of polygalic acid, and the gelatinization of the preparation

in cold weather. Thus, after several years of experience, the conclusion was reached, that if the senega was good, and the process carefully managed, an inconvenient impracticable preparation must result from the formula of the Pharmacopœia. As it was one of the most important and useful of the fluid extracts, it could not be given up, and therefore the writer sought to amend or improve the formula, and with such success after a year's practice, as to warrant the publication of the amended process. The difficulties to be overcome seemed to lie entirely with the menstruum. This would extract the polygalic acid, but would not hold it in permanent solution, and extracted too much of the useless pectin and perhaps other inert matter. After many trials of mixtures of alcohol and water, alcohol and glycerin, in many proportions, it was found that the addition of ammonia to the menstruum enabled it to hold the polygalic acid in permanent solution; and it was next determined how small a quantity of ammonia would effect this object. Increasing the alcoholic strength of the menstruum of course effected the other object of rejecting or excluding the pectin. In this way the following menstruum was reached and adopted, and nearly a year's practice with it on a moderate scale, seems to confirm its utility.

This menstruum is a mixture of one hundred and sixty parts (by weight) of Stronger alcohol, eighty parts of water, and one part of aqua ammoniæ (specific gravity, 0.960). The specific gravity of this menstruum at 15.6° C. = 60° F. is 0.894, and a pint of it at this temperature weighs 6516 grains. At 10° C., a pint weighs 6548 grains, and at 21° C., 6485 grains. When this menstruum is used by repercolation upon three successive portions of sixteen troy ounces or 7680 grains of powdered senega, the differences between the weight of a pint of the menstruum and the successive pints of the percolate, at the same temperature, are, for the first portion of 7680 grains, 474, 267, 145, 92, 47, 19, 14, and 12 grains. For the second portion of 7680 grains, repercolated with pint after pint of this first percolate, the differences in weight between the menstruum and the successive pints of the second percolate at the same tempera-

ture, are, 617, 362, 252, 212, 152, 119, 92, 102, 94, 64, and 29 grains. For the third portion of 7680 grains, repercolated with the second percolate, the differences are 642, 462, 434, 314, 264, 197, 157, 130, 103, and 75 grains.

The residue of powder after being dried weighed, first portion, 4500 grains; second portion, 4560 grains; the third portion having been imperfectly exhausted was not dried for weighing. Then 7680—4500 = 3180 grains as the amount of extract obtained from the first portion, and 7680—4560 = 3120 grains from the second portion.

In practice with these slow and therefore effective percolations, it is found that even when the funnel-point passes well within a narrow-mouth bottle, as it should, there is always a considerable loss of the more volatile portion of the menstruum from the surface of the liquid on top, and from the extended surface of the slowly falling drops, so that in all percolation there is a progressive concentration or inspissation of the liquids, which varies much with the season of the year or temperature, but which is always very considerable, and particularly so with strongly alcoholic menstrua. This to a certain extent multiplies the effect of repercolation and exaggerates the differences of the later series. Thus by other and much larger processes than that above epitomized, it is found that the normal difference between the weight of a pint of the menstruum, and a pint of well-made fluid extract, representing the drug in the proportion of minim for grain, is not much over 490 grains, while the first three pints of the last series of differences if mixed would give an average difference of 512 grains. But if five-sixths of this first three pints of the last of the three percolations be taken as the portion which pretty accurately represents the drug in the proportion of minim for grain, the difference will be still greater, and in a very slow percolation has been known as high as 660 grains. These considerations seem to warrant the conclusion that a safer and more uniform practice with fluid extracts in general, would be to make them by weight exclusively, as the nearest practical approximation to accuracy. If uniformity of quality in the drug could be secured there would

be no great difficulty in securing fair practical accuracy by either measure or weight, or by both together. But so long as it happens as a practical fact, that no two lots of the same drug correspond in quality with any great degree of accuracy, it seems superfluous to aim at a greater degree of refinement or accuracy in the fluid extracts.

If it be remembered in connection with the state of the drug market, that no matter how rich or how poor a drug may be, it must be put into the procrustean bed, and be made to yield the pint of fluid extract from each 7680 grains of powder, the importance of the exclusive use of either weights or measures will not appear so great. The writer is in the habit of seeing good lots of many of the common drugs—senega, for example—which do not yield within two to five per cent. of the same quantity of extract to the same management; and he finds no difficulty in practice, of obtaining a uniformity in results within such limits as this either by weight or measure.

The position was taken in a paper published last year upon "Fluid Extracts and their Menstrua," that on an average fluid extracts should perhaps contain 80 per cent. of the extract which the drug is capable of yielding to the given menstruum. Farther experience, however, seems to indicate that no general standard such as this can be adopted, but that each drug must supply a standard for itself, and that an average cannot reach so high a figure as 80 per cent. And farther, and still more important, that the proportion of extract contained in a fluid extract is not always a measure of its activity in use, nor of the proportion in which it represents the medicinal properties of the drug from which it was made.

Brooklyn, Sept., 1871.

NOTE ON CANTHARIDES AND A BLISTERING LIQUID.

BY EDWARD R. SQUIBB, M.D.

In a recent revision of the Army Medical Supply Table, the writer was consulted upon the adoption for army use of some of

the various blistering-papers, tissues, or plasters, which appear to be so convenient in use, and thus so well adapted to a military organization. Upon careful inquiry, however, it appeared that all these tissues were liable to deterioration under unknown conditions; and that any such want of permanency overbalanced the advantages, particularly for army outposts, where supplies could not be frequently renewed. The tissues were therefore abandoned for the present; but it was thought by the writer that a blistering liquid might be made by taking advantage of the more recent researches upon cantharides, which would give better promise of permanence. Blisters have, in the condition of the patient, and of the surface to which they are applied, and in the degree of skill with which they are applied, so many elements of uncertainty, that it is highly important that the substance used for blistering should be in itself as free as possible from uncertainty. Under different conditions of the patient, a thoroughly active blistering substance may vesicate in four hours, or in seven or eight hours, or may not vesicate at all; and in case of delay or failure, the time is always lost, while it is generally impossible to know whether the cause of delay or failure be in the patient or in the blistering substance.

The general drift of recent observations seems to point to two principal causes of uncertainty in blistering agents. First, the almost absolute insolubility of the active principles of cantharides in ordinary menstrua; and second, the liability of these active principles to become inert, or to fly off in some volatile combination.

The change which takes place in cantharides and its preparations seems somewhat analogous to that which occurs in ergot, and it therefore seems not unlikely that it may be controlled in the same way as that so successfully applied by Prof. Procter in the officinal fluid extract of ergot; that is, by fixing the active principles in new and more permanent combinations.

The important investigation of cantharides in 1852 by Prof. Procter, has served as a basis for many able researches, and notably those of Fumouze, and of Massing, and Dragendorff, in 1867, and Delpech in 1870, so that now the older labors of

Robiquet and others are rather matters of history than guides in practical application.

In an attempt to utilize still further the labors of these recent writers on cantharides, it was determined to make a solution of cantharidin in some convenient menstruum better than collodion, and to make this so strong as to be as nearly certain as possible. A hundred and twenty pounds of good cantharides was freshly powdered, and the powder carefully assayed yielded the full proportion of 0.466 per cent. of cantharidin. Twenty pounds of this powder very thoroughly exhausted by sixty-eight pounds of chloroform by percolation, and the chloroform recovered by distillation, left a black, oily residue, weighing twenty-eight ounces, avoirdupois. This, while warm, treated repeatedly and copiously with bisulphide of carbon to remove the oily matters, left a residue of very light-colored cantharidin, which in proportionate quantity came but little short of the assay. The bisulphide of carbon distilled off should have left the oily and waxy matters free from cantharidin, but upon trial on the writer's arm, this oil proved to vesicate most promptly and actively. Another portion of this oil, separated from the cantharides in another way, proved equally active. Supposing this activity to be due to its still holding some cantharidin in solution, the oil was repeatedly heated and washed with a solution of potassa so dilute as not to saponify the oil, yet strong enough to render the cantharidin soluble, and to wash it out. Still the oil blistered as actively as before, and the writer was thus forced to the conclusion either that this oil held a portion of the cantharidin too obstinately for easy practical separation, or that the oil itself was vesicant, and therefore that the cantharidin was not, as heretofore believed, the only active or vesicating principle of cantharides. This latter explanation is that which the writer is now inclined to accept in preference to the former.

Rejecting the oil and its vesicating properties, however, it was next sought to get the cantharidin into a definite solution which could be made uniform and thus far trustworthy. A variety of menstrua were tried, including most of those which have been commonly suggested, and glycerin and chloroform and their

mixtures in addition. None of these proved to be sufficient solvents, or properly applicable, thus realizing the observations of Prof. Procter as to the peculiar intractability and unmanageable nature of this substance when separated. Many of the cold solutions were vesicant, but all appear to be sluggishly so, and much less active than the oil. These trials all seemed to strengthen the conclusions of Massing and Dragendorff that cantharidin is an anhydride, which in combination fixes two equivalents of water, and then plays the part of an acid to alkaline bases. The salts thus formed are far more soluble than cantharidin, and are soluble in other menstrua, but these solutions are still very dilute when saturated, and appear feeble and sluggish in vesicating effect when compared with the activity of the oil. All this inclined the writer, after much labor, to go back to the beginning, and by the light and general drift of these trials, seek for some definite liquid representative of the crude drug like a fluid extract, wherein the active principles, as in fluid extract of ergot, may be rendered more fixed and permanent by new combination. After preliminary trials of various menstrua for exhausting the powdered cantharides, the officinal diluted alcohol, containing one-sixteenth of its volume of officinal liquor potassæ, seemed to succeed well. But when the liquid obtained and the residue after exhaustion were tried, the first was found rather sluggish in action, and loaded with an unnecessary amount of inert extractive matter, whilst the residue produced some irritation of the skin, and persistent itching after eighteen hours' application. After standing three weeks, the liquid was covered with a film of wax and fatty matter, and had become turbid. All this was accepted as evidence that the menstruum did not contain sufficient potassa and alcohol, and a new menstruum was made containing one-eighth of its volume of liquor potassæ, one-eighth water, and three-fourths stronger alcohol. This menstruum applied to the powder by repercolation yielded a percolate, which when in the proportion of a minim for each grain of powder, was very active in producing vesication. Even when diluted to one-half this strength, its action was energetic and prompt, producing a blister in less than six hours. This percolate contained

no free potassa, and the alcohol appeared to be in sufficient proportion to hold all the oil in solution. On standing exposed for some days it became turbid, and a film of waxy matter formed on the surface. This turbidity and waxy matter did not disappear on the addition of alcohol unless the liquid was heated. The percolate was miscible with water and with alcohol in all proportions, but with turbidity from the separation of waxy matter, with perceptible separation of oil. This percolate was accepted as the blistering liquid sought after. It is really a fluid extract of cantharides in the normal proportion of minim for grain, and as an example of how fluid extracts may be made by weight, and without measures, the formula by which it is practically made will now be given.

FLUID EXTRACT OF CANTHARIDES OR BLISTERING LIQUID.

Take of—

Cantharides, in fine powder,	. .	16 troy ounces.
Solution of Potassa, Stronger Alcohol, Water,	. . .	of each a sufficient quantity.

Make a menstruum consisting of two troy ounces and thirty-two grains (= 2 f℥) of solution of potassa, and four troy ounces and three hundred and twenty grains (= 6 f℥) of stronger alcohol, to moisten the powder with.

Make another menstruum with which to percolate, consisting of 6¼ troy ounces of solution of potassa, 6 troy ounces of water, and 28 troy ounces of stronger alcohol. Divide the powdered cantharides into four equal parts, and moisten each part as it is wanted for percolation with one-fourth of the first menstruum. Then percolate the first part to exhaustion with the second menstruum. Reserve the first troy ounce of the percolate from this first part, and receive the remainder of the percolate in separate portions of about two or three troy ounces each. Re-percolate the second part of the moistened powder with the percolate from the first part, excepting the reserved portion, and follow the percolate from the first part with about two troy ounces of new menstruum. Reserve three troy ounces of the first of the per-

colate from this second part, and separate the remainder of the percolate in fractions as before. Re-percolate the third part of the moistened powder with the percolate from the second part, excepting the reserved portion, and follow the percolate with fresh menstruum as before. Reserve five troy ounces of the first of the percolate from this third part, and separate the remainder of the percolate in fractions as before. Re-percolate the fourth and last part of the moistened powder with the percolate from the third part, excepting the reserved portion, and follow the weak percolate with fresh menstruum to exhaustion as before. Reserve five troy ounces of the first of the percolate from this fourth part, and separate the remainder of the percolate in fractions as before, to be carried on to a future process. Add the reserved portions of percolate together, and mix them as the finished fluid extract. When a new process is to be undertaken, four troy ounces of the powder is to be treated in exactly the same way as each of the above parts, and three and a half troy ounces of the first part of the percolate is to be reserved as finished fluid extract, and the remainder of the percolate is to be carried on to a future operation as before.

A pint of the first menstruum, at 25° C. = 77° F., weighs 6520 grains, and a pint of the second menstruum, at the same temperature, weighs 6482 grains. A pint of the finished fluid extract, at the same temperature, weighs 6850 grains, or 14 troy ounces and 130 grains. The normal difference for this lot of powdered cantharides is therefore 6850 — 6520 = 330 grains.

The officinal liquor potassæ always contains lime and silica, which are precipitated upon admixture with alcohol, and these weights will vary from these figures if this precipitate be left in the mixture. As the officinal liquor potassæ contains about 5.8 per cent. of hydrate of potassa, and as each fourteen troy ounces of the fluid extract contains about two troy ounces and thirty-two grains of liquor potassæ, it follows that the total quantity of hydrate of potassa represented in the fourteen troy ounces is about 57.5 grains or 0.85 per cent. This is, however, entirely saturated by the cantharidin and by the oil, and is present in the fluid extract as cantharidate of potassa and as a soap, both

being held in perfect solution by the alcoholic menstruum, the turbidity on standing and by dilution consisting of inert matter in inconsiderable quantity. The only thing which appears undetermined in the preparation is its permanence. All the published researches on this point and all the analogies that are available, however, are in favor of its permanency, and as it proved very prompt and effective when reduced one-half in strength, it has a very good margin to secure its certainty.

It is therefore believed to be an excellent fluid extract of cantharides, and available for all therapeutic uses of the drug, internal as well as external, while it is both convenient and economical. It is, of course, an active poison, and should therefore bear a red label, and be dispensed with due care. As it can only be needed in small quantities, it should be put up in one and four ounce bottles.

For internal use it may be diluted to any desired extent, and may be given in any simple vehicle.

As a rubefacient, or mild and continuous counter-irritant, it may be added in very definite proportion to plasters, cerates, ointments, liniments, &c., to obtain any desired degree of effect.

As a vesicant, it is perhaps best applied by means of thin bibulous paper, such as common filtering-paper or newspaper, covered by oiled silk or adhesive plaster. One minim of the fluid extract sufficiently moistens one square inch of such paper, and this is a good proportion in use,—a fluid drachm for an eight inch blister, for example. The paper should be cut of the shape and size required, and a piece of oiled silk or oiled muslin, or a piece of common adhesive plaster, of the same shape but larger size, should be cut as a covering. The paper is then folded upon itself several times, and while lying on the middle of the oiled silk the fluid extract is dropped upon it until the paper is just thoroughly moistened or saturated, so that none of the liquid can drain out and spread over more of the surface than is desired. If it be accidentally or incautiously wetted too much, a few minutes' exposure will remedy this, by the evaporation of the alcohol. Paper thus moistened may be entirely dried, and be preserved for use in the dry state, to be moistened with water

as required for use, but although likely to be more permanent, as shown by M. Delpech, than any of the common blistering tissues, its permanency has not yet been ascertained. It is therefore, for the present, considered better and safer to keep the blistering substance in the liquid form, and to moisten the paper with the liquid as it is required for use. This paper, thus moistened, is simply applied to the skin and covered with the oiled silk. In dispensing a blister of this kind, it is simply necessary to wrap the folded moistened paper up in the oiled silk, and then the whole in paper, with written directions for the simple mode of application. The skin should be cleansed from secretions before the paper is applied, but this is less necessary with this than with the ordinary forms of cantharides, because the active principles are here in a far more soluble condition. Of course, some means must generally be taken by bandage or by light compression to keep the paper in contact with the skin. A gentle pressure over the oiled silk for a few minutes, until it becomes warm and soft, will cause its margin to adhere to the surface around the paper, and usually this will be all that is needed. Narrow strips of adhesive plaster or isinglass plaster or a bandage may occasionally be required. Three to five hours' contact is generally sufficient to produce full vesication, but the cuticle will not generally be raised into a blister for six or seven hours, whether the paper be left in contact or not. The common practice of removing the blister at the end of five hours and substituting a water-dressing is excellent practice. If the blister be very painful and irritating to a patient, the water-dressing may be made with a half per cent. solution of carbolic acid, as in treating a superficial burn, instead of simple water, when the pain and soreness will promptly subside. This dressing, however, will lessen the counter-irritant effect of the blister somewhat, and to that extent will interfere with its object.

A collateral advantage of this fluid extract may be expected from the circumstance that the active principles are soluble in water, and may be easily washed from the surface by simple sponging after the blister is removed, thus lessening the absorption and the liability to strangury. It is also easily washed off

the hands and other parts to which it becomes accidentally applied, and from the surfaces to which it is purposely applied, at any stage of its action. This should give it a great advantage over the cantharidal collodion in many of its applications, and should nicely adapt it to use about the os uteri. It should also be far more certain than the cantharidal collodion.

The writer regards this preparation as a striking example of the conservative ground which he has taken for some years past, that the search for, and the isolation of so-called active principles of drugs in therapeutics and pharmacy, may be easily, if it be not generally, carried too for. He believes that he has proved by the labor which is epitomized in this paper, that a well-constructed fluid extract of cantharides is in every practical sense better than any preparation of cantharidin, or of cantharidate of potassa, and is all-sufficient for every known use of the drug which it represents.

Therefore, as good fluid extract of ergot is far better for practical use than any of the so-called active principles of ergot; and as fluid extracts of aconite root, belladonna root, conium seed, and nux vomica, are better for therapeutic uses than aconitia, atropia, conia, and strychnia, so is a fluid extract of cantharides better than the drug itself, and better than its active principles. At least such is the conviction of this writer.

Brooklyn, September, 1871.

NOTE ON OFFICINAL EXTRACT OF JALAP.

BY EDWARD R. SQUIBB, M.D.

The great and long-recognized difficulties of making and keeping the officinal extract of jalap in powder, have this summer culminated in impossibility in the writer's practice, and he has now on hand a large stock of it which is entirely unsalable, from having collapsed into a tough tenacious mass. These difficulties all belong to the watery portion of the extract, and this watery portion has long ago been proved to be inert and useless.

It is not only objectionable on account of its hygrometric properties, but also because that in ordinary officinal practice, it introduces an unnecessary variability into the extract. It is well known, that no two lots of even the best commercial jalap yield the same proportion of alcoholic and of watery extracts; and that in proportion as the yield of alcoholic extract is small, from a larger proportion of immature roots, the yield of watery extract is large, and the mixture feeble in medicinal effect. Indeed it may be said, as a rule, that inferior jalap yields to strict officinal treatment, as much officinal extract as good jalap.

This difficulty was overcome many years ago by the writer, by the simple expedient of a model process. A good specimen of jalap was exhausted first by alcohol, and then by water, in strict accordance with the Pharmacopœia, but the two extracts were carefully dried separately, and weighed.

The yield from 100 pounds of powder, representing 109 pounds of jalap in the commercial condition, was 15 pounds, and the yield of watery extract was 31 pounds. These extracts when thoroughly mixed by melting them together, gave 45 pounds, the loss having doubtless been from farther drying of the watery extract.

This gives as the normal yield of officinal extract 45 per cent., if calculated upon the weight of the powdered jalap, or 41.3 per cent., if calculated upon the jalap root in its undried commercial condition. The dried extract lost about 2 per cent. in powdering.

In referring to the notes of about 2400 pounds of jalap converted into officinal extract within the past ten years, the total yield is found to vary between 35 and 52 per cent. The alcoholic extract varies between 9 and 17 per cent., and the watery extract varies between 26 and 40 per cent.

The above model process was accepted as a normal or standard, and the extracts have always been made separately, and mixed in this proportion, and in a practice of many years there has only twice been an excess of alcoholic extract, all the remaining processes, six in number, yielding an excess of watery extract.

Upon the basis of the above model process, the officinal ex-

tract consists of one-third, or 33 per cent. alcoholic extract of jalap, and two-thirds or 67 per cent. watery extract, and when so mixed must be practically uniform, though two-thirds of it may be considered inert, and worse than useless, since it is this watery extract which complicates the process and increases the labor and expense of making, while it renders the preparation difficult to keep in powder.

Under these circumstances, and because the extract of jalap if not in, at least, a coarse powder, is almost absolutely unsalable, the writer has been reluctantly obliged to abandon the officinal preparation, and now makes only the alcoholic extract as yielded by the first part of the officinal process, under the title of alcoholic extract of jalap. This extract represents good powdered jalap, in the proportion of one grain of the extract to seven grains of the powdered root; and it represents the officinal extract in the proportion of one grain of alcoholic extract to three grains of the U. S. Pharmacopœia extract. Those who choose to use it instead of the officinal extract may either take it in one-third the quantity, or may dilute each part by weight with two parts of any inert, starchy or saccharine powder, and use the well-triturated mixture in the officinal proportions. It will be hard to get a diluent which is not better adapted to the purpose than the sticky hygroscopic watery extract, but as it is rarely used except in combination with other substances, and is generally used in pills, diluents will be rarely needed.

This alcoholic extract of jalap is also much more economical than the officinal extract, because the rejection of the watery extract so much lessens the labor and expense of making as to reduce the cost by one-third, and keep the profit the same, or better. That is, supposing the officinal extract to be worth $5 per pound, the value of the alcoholic extract would be $15 per pound, whereas it can be made for $10 and pay a liberal profit.

This alcoholic or resinous extract of jalap, must not be confounded with the officinal resin of jalap, for although identical with very much of the commercial resin of jalap that is sold in

the markets, it differs by nearly 3 per cent. deficiency in medicinal strength from the officinal "resina jalapæ." That is, when the alcoholic extract is washed with water in the proportion and in the manner directed for the preparation of resina jalapæ, it loses on an average about 3 per cent. The alcoholic extract is therefore so near the medicinal value of the resin, that the latter seems to be a superfluous preparation.

The writer is very much opposed to practicing or advising any departure from the U. S. Pharmacopœia, and has given up making several preparations within the past ten years, because they could not be made by him without such departure. But the preparations were of less importance than this, while this process although laborious, troublesome, and unprofitable, has not until lately proved impossible. When the writer served in the Committee of Revision of the U. S. Pharmacopœia in 1850, he strenuously urged the rejection of the watery extract from this preparation for the reasons now given. But these reasons were not accepted as sufficient, although Mr. A. B. Taylor, a member of the committee then as he is now, testified to having taken this watery extract in repeated large quantities without any discoverable effect either as a purgative or diuretic. In respect and proper deference to the judgment of a majority of the committee, the writer has spent much time and labor without profit, and which labor he has always believed to be wasted throughout ten years, and only now departs from the officinal standard, because from some change in commercial jalap, or other unknown cause, it has become impossible for him to follow the process.

Brooklyn, Sept., 1871.

ON THE SOLID ALCOHOLIC EXTRACTS OF THE U. S. PHARMACOPŒIA.

BY W. SAUNDERS, LONDON, ONTARIO, CANADA.

The formulæ given in the Pharmacopœia for the preparation of solid extracts are evidently designed for the guidance of the

retail pharmacist, who is supposed to make these products for his own use in dispensing. It is a matter of regret that so few pay any attention to this department of pharmacy, leaving it almost altogether in the hands of the wholesale manufacturer. Doubtless these preparations may be made more economically on a large scale than they can on a small one, but when we consider the temptation there is in the close competition which prevails among the wholesale dealers either to use inferior drugs or to adulterate, and the great difficulty attending the detection of inferiority or adulteration in this class of products, it behooves the dispenser of medicines, who has the interest of his customers and the sustenance of his own reputation at heart, to insure the purity of his extracts by preparing them himself. It has been well said that "views of economy should never be allowed to interfere with the efficiency of medicines." The object of the present paper is to show the yield and probable cost of preparing those extracts in which alcohol is used as a menstruum, and to indicate when and where alcohol may be economized without injury to the product.

Extractum Aconiti Alcoholicum.—The operator is directed to take of aconite leaf, recently dried and in fine powder, 12 ounces; alcohol, a pint; diluted alcohol, a sufficient quantity. Introduce the powder, previously mixed with one-third of the alcohol, into a conical percolator, and pour upon it the remainder of the alcohol. When the liquid has all been absorbed by the powder, pour on diluted alcohol until a pint of tincture has been obtained. Continue the percolation with diluted alcohol until two pints more of tincture have passed, or until the powder is exhausted; then evaporate. These instructions were followed with one slight exception,—the leaves, instead of being in fine powder, were reduced to a moderately coarse powder, such as may be readily obtained by the use of a Swift's drug mill, the coarser particles being sifted out by passing the material through a sieve of about twenty-five meshes to the inch. As the object aimed at was to ascertain the quantity of solid matter in each pint of percolate, the directions given in the Pharmacopœia regarding evaporation were not strictly followed. The first pint,

representing the solvent powers of strong alcohol on the constituents of the leaf, yielded on evaporation 4 drachms, 30 grains of solid extract; the second pint, showing the action of diluted alcohol, 8 drachms, 6 grains; the third, 5 drachms, 32 grains. Total yield, 2 ounces, 2 drachms, and 10 grains. Amount of strong alcohol used, 1 pint; diluted alcohol, 3 pints, 12 ounces. Total consumption of alcohol, 2 pints, 14 ounces.

The directions given as to the temperature at which evaporation is to be conducted prevents the recovery of any portion of the alcohol by distillation, excepting in a few cases, which will be noted as we proceed, unless the operator be provided with a vacuum apparatus. Estimated cost of this product, taking alcohol at $2 per gallon and aconite leaves at 40 cents per pound, 44 cents per ounce.

Extractum Arnicæ Alcoholicum.—This is ordered to be prepared by treating 24 ounces of the material, first with 6 pints of a mixture of two parts of alcohol to one of water, then follow with diluted alcohol until 6 pints of tincture are obtained. In this instance one-half the quantity was operated on, and the product, 3 pints, evaporated separately, as procured from the material.

From the first pint was obtained 9 drachms, 36 grains; from the second, 5 drachms, 30 grains; and from the third, 3 drachms, 22 grains. Total yield, 2 ounces, 2 drachms, 28 grains. Quantity of alcohol used in the first mixture, 2 pints; diluted alcohol, 2 pints. Total consumption of alcohol, 3 pints. Estimated cost of product, arnica at 30 cents per pound, 43 cents per ounce. Since nearly 2 pints of the liquid remain absorbed by the material, the last pint of diluted alcohol might be replaced by water, reducing thus the cost of the product to 38 cents per ounce.

Extractum Belladonnæ Alcoholicum.—This is directed to be obtained in precisely the same manner as arnica, and in this instance also half the quantity, 12 ounces, was operated on. The first pint of percolate yielded 12 drachms, 52 grains; the second, 5 drachms, 40 grains; and the third, 3 drachms, 20 grains. Total yield, 2 ounces, 5 drachms, 52 grains. Quantity of alcohol used in the mixture of two parts to one of water, 2

pints; diluted alcohol, 1 pint, 12 ounces. Total consumption of alcohol, 2 pints, 14 ounces. Estimated cost of product, belladonna at 40 cents per pound, 37½ cents per ounce. In this instance, since 1 pint 12 ounces of diluted alcohol is absorbed by the material, it would be quite safe to substitute water for the last pint of diluted alcohol used, which would reduce the cost of the extract to 33½ cents per ounce.

After the 3 pints of percolate ordered in the Pharmacopœia had been procured, water was added until a pint of the diluted alcohol which the leaves had absorbed was displaced, which on evaporation yielded an additional quantity of 2 drachms, 10 grains of solid extract.

Extractum Cinchonæ.—In the preparation of this extract, the yellow or Calisaya bark is ordered to be used, but as this variety of bark of a reliable quality was not at hand, red bark of good quality was substituted. 12 ounces of the cinchona in fine powder is directed to be moistened with 3 fluid ounces of alcohol, transferred to a conical percolator, and 3 pints 13 ounces of alcohol gradually added. When the liquid ceases to pass, water is used to displace the remainder of the alcohol, until the product measures 4 pints; after which continue to add water until 6 pints of infusion are obtained. The alcohol is to be recovered by distillation, and the watery infusion evaporated until both are brought to the consistence of thin honey, then mixed and further heated until reduced to the proper consistence.

The first pint of percolate yielded 11 drachms, 44 grains; the second, 4 drachms, 24 grains; the third, 2 drachms, 40 grains; the fourth, 2 drachms, 46 grains; the fifth (which was the first pint of watery infusion), 4 drachms, 12 grains; the sixth, 56 grains; the seventh, 36 grains; the eighth, 20 grains; the ninth, 12 grains; and the tenth, 8 grains; total yield, 3 ounces, 3 drachms, 58 grains. Quantity of alcohol used, four pints, of which probably three pints may be recovered by distillation. Loss of alcohol, one pint. Estimated cost of product, cinchona at $1.10 per pound, about 30 cents per ounce.

When the finely-powdered bark is used, it is necessary to mix it with an equal bulk of sand, otherwise when the water is added,

the powder swells so much as to prevent the liquid from passing through. The fourth pint of percolate yielded more solid material than the third, which may be accounted for from the fact of a little of the strong watery infusion becoming mixed with the alcohol towards the close. The yield of the last three pints of watery infusion is so trifling, 40 grains in all, as to be scarcely worth the time and labor expended in obtaining it.

Extractum Conii Alcoholicum.—The directions for preparing this product are the same as those given when treating of aconite. The first pint of percolate yielded of solid extract, 5 drachms, 2 grains; the second, 7 drachms, 28 grains; the third, 4 drachms, 56 grains; total yield, 2 ounces, 1 drachm, 16 grains. Quantity of strong alcohol used, 1 pint. Diluted alcohol, 3 pints, 6 ounces. Total consumption of alcohol, 2 pints, 11 ounces. Estimated cost of product, conium at 30 cents per pound, 43 cents per ounce. In this instance, 1 pint, 6 ounces of diluted alcohol remain absorbed by the material, which would admit of economizing again by substituting water for the last pint of diluted alcohol used, which would reduce the cost of the product to about 37 cents per ounce, or otherwise a fourth pint of percolate may be obtained by adding water, when the additional yield would be 2 drachms, 40 grains, which would reduce the cost to about the same point. It will be noted that the diluted alcohol in the second pint of percolate contained considerably more extract than the first or alcoholic percolate.

Extractum Digitalis Alcoholicum.—The directions given for preparing extract of aconite apply here also. The first pint of percolate yielded 7 drachms; the second, 7 drachms, 4 grains; the third, 7 drachms, 44 grains; total yield, 2 ounces, 5 drachms, 48 grains. Quantity of alcohol used, 1 pint. Diluted alcohol, 4 pints, 2 ounces. Total consumption of alcohol, 3 pints, 1 ounce. Estimated cost of product, digitalis at 30 cents per pound, 36 cents per ounce. 2 pints, 2 ounces of diluted alcohol in this instance were taken up by the material, which would admit of a pint of water being substituted for the last pint of diluted alcohol, which would reduce the cost of the extract to 32 cents per ounce. It seems strange that the third pint of perco-

late should have yielded more than the second; I can only account for it from the fact of the material being allowed to stand for an hour or two on account of other engagements, and attribute the extra yield to the maceration. Subsequently a fourth pint of percolate was obtained by the addition of water to displace a portion of the diluted alcohol, when the yield fell off to 3 drachms, 56 grains.

Extractum Dulcamaræ.—This is ordered to be prepared by exhausting the bittersweet in moderately fine powder with diluted alcohol, without stating the quantity to be used; the alcohol to be distilled from the tincture, and the residue evaporated to the proper consistence. The first pint of percolate yielded 7 drachms, 26 grains; the second, 3 drachms, 22 grains; the third, 1 drachm, 52 grains. Up to this point 4½ pints of diluted alcohol had been used, showing that 1½ pints had been taken up by the material. Water was added to displace a pint of this, which on evaporation yielded 56 grains. Total yield, 1 ounce, 5 drachms, 36 grains. Quantity of alcohol used, 2 pints, 4 ounces. Allowing three-fourths of this to be recovered by distillation, there is still a loss of 9 ounces of alcohol. Estimated cost of product, bittersweet at 35 cents per pound, 24 cents per ounce.

Extractum Hellebori Alcoholicum.—The directions given for preparing this extract are the same as those for extract of aconite. The first pint of percolate yielded 20 drachms, 16 grains; the second, 10 drachms, 16 grains; the third, 3 drachms, 4 grains; total yield from 12 ounces of the powdered hellebore, 4 ounces, 1 drachm, 36 grains. Quantity of strong alcohol used, 1 pint. Diluted alcohol, 3 pints. Total consumption of alcohol, 2½ pints. Estimated cost of product, hellebore at 25 cents per pound, 20 cents per ounce.

About an equal bulk of sand was mixed with the finely powdered hellebore to facilitate percolation, and on this account there was more alcohol absorbed than would otherwise have been, one pint being taken up by the material. The yield of extract from the first pint of percolate was very large, more than 2½ ounces, while that from the third pint was only about

one-seventh as much, showing that the hellebore was rapidly exhausted.

Extractum Hyoscyami Alcoholicum.—Process of preparation the same as that for extract of arnica. Twelve ounces of the ground leaves, half the quantity ordered in the Pharmacopœia, was treated, and 3 pints of percolate obtained instead of 6 pints. The first pint yielded of solid extract 7 drachms, 32 grains; the second, 4 drachms, 4 grains; the third, 2 drachms, 38 grains; total yield, 1 ounce, 6 drachms, 14 grains. Alcohol used in the mixture of 2 to 1 of water, 2 pints. Diluted alcohol, 1 pint, 14 ounces. Total consumption of alcohol, 2 pints, 15 ounces. Estimated cost of product, hyoscyamus at 35 cents per pound, 55 cents per ounce. At the close of the operation, there remained absorbed by the leaves 1 pint, 14 ounces of diluted alcohol, 1 pint of which was displaced with water and evaporated, yielding 1 drachm, 24 grains. In this case also water might be advantageously substituted for the last pint of diluted alcohol, which would reduce the cost of the product to 48 cents per ounce.

Extractum Ignatiæ Alcoholicum.—In operating on ignatia bean a difficulty presented itself which, after strenuous exertion, was not fully overcome. I refer to the powdering of the bean. It is ordered to be used in fine powder, a condition which notwithstanding repeated poundings and grindings I failed to reduce it to. It was finally brought to a sufficiently fine state of division to allow of its passing through a sieve of thirty meshes to the inch, and I hoped by lengthened maceration to make amends for lack of fineness in the powder, but am satisfied from the bitterness of the material at the close of the operation that exhaustion was not complete, and do not wish the yield of extract as given below to be regarded as strictly correct.

Twelve ounces of the ground bean was moistened with four fluid ounces of alcohol, packed in a conical percolator and allowed to stand for twelve hours, instead of one hour as directed, after which the percolation was steadily but slowly continued with strong alcohol. The first pint of percolate yielded of solid extract, 2 drachms, 8 grains; the second, 1 drachm; the third, 24 grains. Total yield, 3 drachms, 32 grains. Three

pints, 6 ounces of alcohol was used in all, 6 ounces being absorbed by the material, and the percolate measuring 3 pints, is directed to be distilled until the liquid is reduced to half a pint. The waste on this would, in small operations, probably amount to 20 per cent. or more, say 8 ounces, making the total loss of alcohol 22 ounces. Estimated cost of product, ignatia bean at 75 cents per pound, about $2 per ounce.

Extractum Jalapæ.—Process of preparation is the same as that given for extract of cinchona. Four pints of alcohol are first used on the twelve ounces of powder, the last remaining portions of the spirit, which would otherwise be retained by the material, to be displaced with water. Percolation with water is then to be continued until six pints of watery infusion are obtained. The alcohol is to be recovered from the first four pints of percolate by distillation, and when both are sufficiently reduced, to mix and evaporate them to a proper consistence. The first pint yielded of solid extract, 12 drachms, 10 grains; the second, 2 drachms, 10 grains; the third, 52 grains; the fourth, 4 drachms, 12 grains; the fifth, 8 drachms, 14 grains; the sixth, 6 drachms, 4 grains; the seventh, 1 drachm, 26 grains; the eighth, 33 grains. The powdered jalap was mixed with an equal bulk of sand to hasten percolation, but even with this addition the operation was so very slow that many days elapsed before the eighth pint had passed, when seeing the yield of extract had become so far reduced, it was not thought worth while continuing the process further. Total yield of solid extract, 4 ounces, 3 drachms, 41 grains. Estimated cost of product, taking the loss of alcohol at one pint, and jalap at $1 per pound, about 23 cents per ounce. The fourth pint shows a much larger yield than the third, arising, no doubt, from the fact of a portion of the strong watery infusion having found its way through, and become mixed with the alcoholic percolate.

Extractum Nucis Vomicæ Alcoholicum.—The process of preparation given here is the same as that for ignatia. Twelve ounces of nux vomica in moderately fine powder was moistened with four ounces of alcohol, transferred to a percolator and allowed to macerate for one hour, after which alcohol was

gradually added until three pints had passed through. The first pint yielded of solid extract, 4 drachms, 40 grains, besides 2 drachms and 12 grains of fixed oil, which was removed from the extract by means of bibulous paper; the second pint, 1 drachm, and a small additional quantity of fixed oil; the third pint, 44 grains. Total yield, 6 drachms, 24 grains. Three pints and a half of alcohol was used, half a pint being absorbed by the material. The three pints of percolate is directed to be distilled until reduced to half a pint, which would probably entail a waste of 8 ounces, making the total loss of alcohol 24 ounces. Estimated cost of product, powdered nux vomica at 30 cents per pound, about 75 cents per ounce.

There is one place in the Pharmacopœia where the wording of the directions in relation to the preparation of this extract might be improved. It reads thus: "Mix the nux vomica with four fluid ounces of alcohol, and allow the mixture to stand for an hour; then introduce it into a cylindrical percolator," &c. Would it not be better to direct that the moistened powder be introduced at once into the percolator and allow maceration to take place there, and thus the loss of alcohol would be avoided, which would necessarily occur from exposure in such an open vessel as that in which such powders are usually mixed? The wording needs similar correction with ignatia also.

Extractum Podophylli.—The instructions for the preparation of this extract are the same as those given for extract of cinchona, viz.: to treat the powder first with four pints of alcohol, displacing the last of the alcohol with water; then continuing to add water until six pints of infusion are obtained. Recover the alcohol by distillation, and mix the extracts when sufficiently reduced. The first pint of percolate yielded 3 drachms, 32 grains; the second, 44 grains; the third, 30 grains. Before the fourth pint was fully got off the liquid began to grow milky, indicating that water was passing through when the percolation was stopped, and on evaporation the liquid yielded 32 grains, an increase on the former pint of two grains, showing that a little watery extract had been forced through. The fifth pint yielded 6 drachms, 44 grains; the sixth, 5 drachms, 22 grains;

the seventh, 3 drachms, 28 grains; the eighth, 2 drachms, 50 grains; the ninth, 2 drachms, 36 grains; the tenth, 1 drachm, 18 grains. Total yield, 3 ounces, 3 drachms, 36 grains. Estimated cost of product, taking loss of alcohol as one pint, and powdered podophyllum at 25 cents per pound, about 13 cents per ounce. The latter portions of the watery extract have scarcely a trace of the characteristic flavor of the root, and are probably almost inert.

Extractum Rhei Fluidum.—Twelve ounces of rhubarb in moderately fine powder is directed to be moistened with 4 ounces of alcohol and packed in a conical percolator. The remainder of a pint of alcohol is then to be added gradually, followed with the use of diluted alcohol, until 12 fluid ounces of tincture have been obtained, after which continue to add diluted alcohol until the liquid passes nearly tasteless. Evaporate the solutions separately, and when reduced to a proper consistence mix them. In all other instances where a pint of strong alcohol is first used on the material, the first *pint* of percolate is set aside and evaporated separately, whereas in this instance, 12 *fluid ounces only* are ordered to be so treated, without any apparent reason for the change. Whether this is designedly so arranged or an oversight or error, I am unable to say, but desiring uniformity in my own experiments, I set aside the first *pint* of percolate as before. The yield of solid extract from the first pint was 2 ounces, 4 drachms, 20 grains; from the second, 2 ounces, 3 drachms, 32 grains, and from the third pint, 6 drachms. Although the liquid at this point was by no means tasteless, it was not thought economical to continue the percolation further. Total yield, 5 ounces, 5 drachms, 52 grains, or nearly one-half of the weight of the root employed. Quantity of alcohol used 1 pint. Diluted alcohol 2 pints, 14 ounces. Total consumption of alcohol, 2 pints, 7 ounces. Estimated cost of product, rhubarb at $1.50 per pound, 32 cents per ounce. 14 ounces of diluted alcohol was absorbed by the material, two-thirds of which might have been displaced with water, and thus added to the product, without increasing its cost, but it was overlooked at the time.

Extractum Senega Alcoholicum.—12 ounces of senega root is

ordered to be moistened with 4 ounces of diluted alcohol, packed in a conical percolator, and diluted alcohol gradually added until 3 pints of percolate are obtained. The first pint yielded 2 ounces, 2 drachms, 24 grains; the second, 8 drachms, 8 grains; the third, 3 drachms, 8 grains, and as there was still nearly 1 pint absorbed by the root, water was added to displace 12 ounces, which when evaporated yielded 1 drachm, 4 grains. Total yield, 3 ounces, 6 drachms, 44 grains. Quantity of diluted alcohol used 4 pints, making the total consumption of alcohol 2 pints. Estimated cost of product, senega at 75 cents per pound, 28 cents per ounce.

With this root exhaustion proceeds very rapidly, and the last pint of diluted alcohol might be substituted by a sufficient quantity of water to displace 12 ounces of tincture, at a saving of 13 cents, with a loss of 52 grains only of extract, which would reduce the cost of the product to about 26 cents per ounce.

Extractum Stramonii Alcoholicum.—The directions given for preparing this extract are the same as those for extract of aconite. The first pint of percolate which is alcoholic yielded 6 drachms, 24 grains; the second, the result of diluted alcohol, 11 drachms, 36 grains; the third, 6 drachms, 58 grains; the fourth pint obtained by displacing the diluted alcohol with water, 2 drachms, 40 grains. Total yield, 3 ounces, 3 drachms, 38 grains. Quantity of strong alcohol used 1 pint. Diluted alcohol, 3 pints, 4 ounces. Total consumption of alcohol 2 pints, 10 ounces. Estimated cost of product, stramonium at 25 cents per pound, 25 cents per ounce.

Extractum Valerianæ Alcoholicum.—Process of preparation the same as that of extract of aconite. The first pint of percolate (alcoholic) yielded of solid extract 2 drachms, 52 grains; the second, the result of diluted alcohol, 1 drachm, 40 grains; the third, 32 grains. As the material absorbed only seven ounces, and the yield from the third pint was so small, further displacement by water was not attempted. Total yields 4 drachms, 24 grains. Strong alcohol used 1 pint. Diluted alcohol, 2 pints, 7 ounces. Total consumption of alcohol 2 pints,

3½ ounces. Estimated cost of product, taking valerian at 30 cents per pound, $1.40 per ounce.

The results of these experiments may be more readily referred to, if given in a tabular form, thus:

	Quantity of Material used.	Yield of Extract obtained.	Estimated cost of Product.
Ext. Aconiti Alcoholicum,	12 oz.	2 oz., 2 drs., 10 grs.	44 cts. per oz.
" Arnicæ "	12 "	2 " 2 " 28 "	43 " "
" Belladonnæ "	12 "	2 " 5 " 52 "	37½ " "
" Cinchonæ "	12 "	3 " 3 " 58 "	30 " "
" Conii "	12 "	2 " 1 " 16 "	43 " "
" Digitalis "	12 "	2 " 5 " 48 "	36 " "
" Dulcamaræ "	12 "	1 " 5 " 36 "	24 " "
" Hellebori "	12 "	4 " 1 " 36 "	20 " "
" Hyoscyami "	12 "	1 " 6 " 14 "	55 " "
" Ignatiæ "	12 "	3 " 32* "	$2 00 "
" Jalapæ "	12 "	4 " 3 " 41 "	23 cts. "
" Nucis Vomicæ "	12 "	6 " 24 "	75 " "
" Podophylli "	12 "	3 " 3 " 36 "	13 " "
" Rhei "	12 "	5 " 5 " 52 "	32 " "
" Senegæ "	12 "	3 " 6 " 44 "	28 " "
" Stramonii "	12 "	3 " 3 " 38 "	25 " "
" Valerianæ "	12 "	4 " 24 "	$1.40 "

The estimate given of the cost of the various products has been made on the supposition that the vacuum-pan is not within the reach of the great majority of pharmacists. Where such an instrument is in use, the saving of the alcohol would in some instances greatly lessen the cost of the extracts. I would also observe that if the material, with some few exceptions, was allowed to be used in a coarser condition, say fine enough to pass through a sieve of thirty meshes to the inch, and longer maceration ordered—six or twelve hours—before percolating, that in my opinion, the formulæ would be improved and brought more in harmony with the equipments of an ordinary store; for if the pharmacist cannot select his material in the crude state and have it reduced to the necessary degree of fineness under his own control, but little certainty exists as to the quality of his results.

* Probably this was not fully exhausted. See remarks under the head of Ext. Ignatiæ Alc.

ON SUPPOSITORIES.

BY R. B. FERGUSON.

QUERY 10.—What is the best practical method for making suppositories extemporaneously?

"THE best *practical method.*" This phraseology, I suppose, is intended to imply, first, the best method to fulfil the purposes for which suppositories are used; and second, *practical*, from a pharmaceutical standpoint, to be made with rapidity and ease. Taking this view of the meaning of the words of the query, the following method is proposed.

Obtain a good smooth board of soft wood (white pine, perhaps, is the best), about fifteen inches wide and two feet long; weigh the quantity of cacao butter for the required number of suppositories—we use for rectal, fifteen to twenty grains, for vaginal, one to four drachms, and for urethral, from three to ten grains—with a spatula, cut the cacao butter into shavings, and having added the medicinal agent by rubbing with a spatula on the board, reduce to a plastic mass (should be rather softer than an ordinary pill mass); then roll out and divide as if making pills; pinch each lump with the fingers into a conical form, and with a broad spatula, held at the proper angle, roll smooth and in the desired shape. In making vaginal or urethral suppositories, use a piece of glass four or five inches square, or if that is not at hand, the top of a tin seidlitz box will do very well, for smoothing and giving the proper shape. In warm weather, or if the mass is very soft, use a little arrowroot or starch to prevent the cacao butter from adhering to the board; the arrowroot should not be dusted, but rather *pressed* on the board, thus making a smooth surface over which the suppository will roll, taking up but little of the arrowroot; during the manipulation the fingers must be kept perfectly dry, any melted cacao butter allowed to remain on the fingers will occasion great annoyance and loss of time. In cold weather, to save time and labor, the board should be placed near a stove or heater while rubbing the cacao butter to the proper consistence. During the severe summer heat cacao butter should be kept in a cold place, other-

wise very little friction with the spatula will cause it to become too soft to be handled with facility, and may prevent the uniform distribution of the medicament. In warm weather, the suppositories should be placed on ice for a *few* minutes, before being given to the customer.

I have endeavored to describe briefly a practical method for making suppositories, which a daily experience for five years has proven to be good. I have never succeeded in *moulding* suppositories with cacao butter, without adding wax or other hardening material.

The method here proposed is thought to be the best for the following reasons: First, nothing but cacao butter is used as a vehicle; this article being inert, and not irritating to the most sensitive surface, while the admixture of wax or other hardening substance might, in some instances, augment the disease the use of the suppository was intended to palliate, or perhaps to cure; again, the fusing-point of cacao butter being about the same as animal temperature, there is no danger that the suppository will remain unmelted and prove a cause of irritation; if it should be desirable that the suppository should melt slowly, on account of the slowness of the parts to absorb the medical ingredient, the result can be accomplished by using a larger proportion of cacao butter.

Second. The necessary manipulation insures a perfect distribution of the medicinal agent throughout the suppository, so that the effect of the remedy is experienced as the suppository melts.

Third. By this method suppositories can be dispensed rapidly; ordinary morphia suppositories can be made and delivered to the customer in ten minutes with ease; of course, if opium or extracts are used, a little longer time will be consumed. A little experience will enable any pharmacist to make suppositories as neat in appearance by this method as if moulded.

When this query was first proposed to me, I declined to accept it, for the reason that the method I have practiced is so very simple, I had supposed that every pharmacist was as familiar with this way of making suppositories as myself; I would there-

fore not be presenting anything new, and that for some reason, I could not comprehend, it was desirable, if not important, to use moulds; being assured of my mistake in this particular, I consented to answer the query.

I trust those who may be induced to try this plan of dispensing suppositories may find it as practical and as satisfactory as it has been to me.

URETHRAL SUPPOSITORIES.

BY JOSEPH L. LEMBERGER, LEBANON, PA.

In presenting these suppositories to your notice, I do not expect to introduce a new idea, but simply apply an old idea to a new use, with a substantial reason for so doing.

Since last we met as an association, amongst the varied demands claiming the pharmacist's attention was one for something by means of which to reach the neck of the bladder to allay "vesical tenesmus" without the use of a syringe. The case was one of "pelvic cellulitis," excruciatingly painful, the bladder only relieved by means of a catheter, and that operation being always very painful in anticipation, and much more so in reality. The patient for a number of years suffered most excruciating pain upon the introduction of the catheter, the duration of the paroxysm being more frequently one hour than less.

The idea suggested itself to the attending physician that if there could be a suppository made to reach the neck of the bladder, acting endermically, an alleviation of pain might be induced. After some consultation and experiment, the form or shape herewith submitted proved to be the most satisfactory.

The mould for making them was suggested by the old-fashioned candle-mould, on a miniature scale, as sample herewith presented. Each suppository was made to contain three grains of powdered opium, and the composition most suitable seems to be a mixture of filtered yellow wax and cacao butter, in proportion of seven of the former to three of the latter, made as follows:

After preparing the mould by stringing it as you would wick a candle-mould, with this addition, allowing the wick or string to be several inches longer than the suppository, and keeping it on tension, so as to occupy a central position the entire length, then melt the wax and cacao butter carefully, mixing therewith afterwards the opium, and immediately pour into the moulds and cool rapidly in ice-water, when they can usually be withdrawn; or should there be difficulty, as there sometimes is, immerse for a moment in hot water, and they can be easily withdrawn.

When used, they are inserted into the urethra to the part affected, and allowed to remain until the patient is relieved, and then by means of the string is withdrawn. A portion of the suppository having melted by the warmth of the parts, produced the desired end, and miraculous as the result may seem, the pain was reduced from one hour to five minutes.

Novel as this thing may seem, I feel that it is worth bringing to the notice of the Association, believing that this form of suppository can be used with the same good result in other diseases peculiar to those parts, and I have wondered whether urethritis and kindred inflammations might not be cured by the same means.

The fact of my attention having been but recently called to this matter is my apology for so crude an apparatus for making them, and I have no doubt the mode of manufacture can and will be much modified, should the urethral suppository receive the favorable attention it merits.

ARTIFICIAL MINERAL WATERS.

BY AUGUSTUS THEODORE MOITH.

Almost all our drug stores are now found to derive a not inconsiderable part of their income from the sale of soda water, and by many, also, the dispensing of artificial and natural mineral waters begins to be a leading feature.

And certainly this branch of science and trade, by its very

nature, should come and remain in the hands of the pharmacien, instead of forming a separate specialty.

In Germany, the apothecaries Struve, Hagen, and Hirsch, and others, since 1842, have given this branch an impetus and development, which we can see reflected only in a small measure here by some of our leading pharmaceutists in New York and Philadelphia, apart of special establishments, such as Hanbury Smith, Shultze & Warker, and lately John Matthews. But a great many druggists sell and dispense saline solutions, which they call Vichy or Kissingen, &c. When one looks at the available knowledge of the subject by most, it is no wonder that this liquid tastes more like herring pickle, than correct imitation of mineral water.

In the last fourteen years I have seen only *one* correct formula for an artificial Kissingen water published in our periodical scientific literature, and that appeared, beside many other bogus ones, in the Druggists' Circular.

Take for example the formulas given in U. S. Dispensatory and in Tilden's Supplement, lately published; they are all incorrect, and their analysis have been made by chemists just able to detect the main common bases. It is, therefore, impossible to compute as correct imitation from such formulas.

Analyses of mineral waters are intrusted in Europe only to the most eminent chemists there, and any analysis emanating from a lesser authority than Liebig, Wœhler, Fresenius, Kästner, Struve, and a few more, are entirely ignored by the manufacturers of mineral waters.

The same conscientious minute accurateness is insisted on in compounding mineral waters, as our members are expected to prepare any formula from the U. S. Pharmacopœia.

For this reason the artificial mineral waters enjoy there the full confidence of the public.

Being more highly charged with carbonic acid, and, therefore, more sparkling than the natural waters, and being more accessible and economical to the poorer or middle class of people, the artificial waters are preferred to the natural by most.

Among the host of manufacturers of artificial waters here,

none seem to possess the confidence of the medical profession as Mr. Hanbury Smith does; with what just right above others I am unable to say, as Mr. Smith was never known to indicate his formulas, authors, or his system of computing therefrom his working formulas.

In what ludicrous manner Kissingen water and others are compounded by druggists, allow me to mention one case or two.

Asking a very pompous druggist, and compounder of Kissingen water for a drachm or two of chloride or carbonate of lithium, he told me it was the first time he ever heard that name.

Showing me the formula furnished him by a Boston firm, it consisted merely of chloride sodium, chlorate potassa, carbonate magnesia, carbonate lime.

Asking further how he effected the solution of the magnesia and lime, he affirmed there was lots of sediment, which he filtered off and threw away.

And yet some doctors in that town indorsed and drank that brine!

Lately Mr. John Matthews began the manufacture of artificial mineral waters, and as I had the chance of seeing the formulas he says he uses, I must pronounce them correct; provided he sticks to them at minutiæ.

Of the analyses of American waters, except those made by Professor Chandler, of Columbia College, I have serious misgivings or doubts, and abstain, therefore, of offering or dispensing any water to my customers.

Now in offering to the public as perfect an imitation of any mineral water as chemistry can do it, it is necessary in the first place to trust only to an analysis of a chemist of the first order.

As the amount of earthy bases, and the oxides of iron and manganium found in natural waters are insoluble, even under a strong pressure of gas, we have recourse to the following methods:

Suppose the analysis calls for carbonate of lime, grana 25.000, we will have to add instead, this insoluble one, a solution of calcium chloratum, grana 27.750, dry carbonate soda, grana 26.500, producing a precipitate equivalent to carbonate of lime, 25.000, and a supernatant liquid containing chloride sodium,

grana 29.250, which amount must be deducted from the given amount of sodii chloridi, occurring in all mineral waters.

In this way one has to proceed with the rest, substituting a soluble salt in equivalent proportion for an insoluble one.

This computing or calculating from the original analyses constitutes the difficult and laborious preliminary task in making mineral waters.

It requires considerable chemistry, and the extended use of stœchiometrical tables.

In case there occurs not enough chloridi sodii in the original analysis to proceed in this way for all insoluble substances, then for the rest the moist hydrated precipitate of these salts (equivalent) must be drained of its supernatant liquor, and that precipitate put into the fountain. The next requisite is the proper kind of fountains.

Mr. Matthews's glass fountains I think preferable to all others, as copper fountains, no matter how well silvered or tinned, will at some time give a cuprous reaction or taste to the water; if only the durability of these glass fountains could be warranted.

To illustrate the working of this system, I append, side by side, the original analysis of Kissingen, by Prof. Liebig, and the regular working formula:

KISSINGEN. RAKOCZY.

Original Analysis by Prof. Liebig.		*Working Formula.*	
16 troy ounces contain:	Gran.		Gran.
Ferri Carbonatis,	0.242	Sodæ Phosphatis,	0.045
Magnesiæ Carbonatis,	0.131	Silicat. Sodæ,	0.201
Calcis Carbonatis,	8.148	Sodii Chloridi,	34.705
Calcis Phosphatis,	0.043	Potassii Chloridi,	2.203
Acidi Silici,	0.099	Bromidi Sodii,	0.064
Calcis Sulphatis,	2.990	Sodæ Nitratis,	0.071
Sodii Chloridi,	44.713	Lithii Chloridi,	0.153
Magnesiæ Sulphatis,	4.509	Ammoniæ Carbonatis,	0.019
Potassii Chloridi,	2.203	Sodæ Carbonatis,	9.198
Magnesiæ Chloridi,	2.333	Calcii Chloridi,	20.100
Sodii Bromidi,	0.064	Magnesiæ Sulphatis,	7.401
Sodæ Nitratis,	0.071	Magnesii Chloridi,	0.186
Lithii Chloridi,	0.153	Ferri Sulphatis Crystall.,	0.581
Ammonii Chloridi,	0.007	Aquæ Destillatæ,	7017.000

All chemicals used must be chemically pure, and in a dry state; say, deprived of their water of crystallization at 100° C.

In above I give only a fair outline of the whole modus operandi, and will in some future paper, if I am permitted, give the analyses and formulæ of the most celebrated springs of Europe and America. Science has no right to monopolies.

Fishkill, on the Hudson, New York.

PRACTICAL NOTES AND OBSERVATIONS.

BY GEO. C. CLOSE.

Believing it to be the duty of every member of this Association to communicate to his brethren the results of any observations he may have made, which are conducive to their interests or the public health, I have concluded, at the risk of being thought presumptuous, to throw in my mite.

Having frequently been asked for a copy of the recipe for a mixture I have often used myself and recommended to others as a remedy for diarrhœa, I will now present it.

The prescription is only slightly modified, and I think improved by me, from one published in Braithwaite's Retrospect some years since, as having been very successfully used in England.

Having had an extensive opportunity of observing its effects, I have come to the conclusion, that in a large proportion of cases it is an excellent remedy.

It is free from the objections pertaining to the use of narcotics and stimulants, of causing disorder of the stomach and derangement of the nervous system.

On the contrary, I have frequently known of its being given after narcotics and stimulants have partially or wholly failed, with the result not only of curing the disease, but in a measure of correcting the bad effects of the former treatment.

Of course, I do not claim that this mixture is a universal specific.

Diarrhœa is frequently only a symptom of ulceration of the

bowels, or of some other state of the system, where the use of acids would be inadmissible.

Acid mixture recommended for the cure of diarrhœa:

℞. Acidi Sulphurici Diluti, ... f℥j.
Tinct. Cardamomi Comp., ... f℥ij.
Sacchari Albi, ... ℥iv.
Aquæ Menthæ Virid., ... f℥ix.—M.

Dose: Two teaspoonfuls in a wineglass of water, after each movement of the bowels, in diarrhœa; or as a tonic, one teaspoonful three times a day.

In cases of chronic diarrhœa of several years' standing, I have known of a permanent cure being effected, by taking the smaller dose only, but continuing the treatment for some time.

Four fluid ounces of a mixture of the same acid strength has been given in England, at one dose, it is said with excellent effect. I should be loath to recommend so large a dose in any ordinary case; but should like to see it tried in the collapse stage of cholera.

I think this mixture might be substituted with advantage for acid. sulph. arom., being more palatable, and it would save the necessity of dropping the dose.

A concentrated tincture of black cohosh (cimicifuga racemosa), made by percolation, with stronger alcohol, using one pound avoirdupois of powdered root to make a quart of tincture, I believe from long experience to be very valuable as an external application, for the purpose of reducing inflammation.

It should be applied with a plain pencil or feather, in quantity of at least one teaspoonful to the part affected and its immediate surroundings.

It was introduced by my father, in the section of country where he practiced medicine, where it is still much used under the name of "tincture of macrotys," its old botanical name. I believe it to be far more efficacious than tinct. arnica.

The Dr. Brundage mentioned in "Wood and Bache," page 226, as speaking in the strongest terms of the efficacy of its application in ophthalmia, was a pupil of my father, from whom he learned its use.

℞. Acidi Hydrochlorici, ... ℥i to ℥ij.
Aquæ, ... ℥iv.—M.

The above mixture I have recommended for use in cases of "chapped hands," and even when the skin was cracked and bleeding, I have no recollection of its failure to relieve the complaint at once, and if its use was persevered in, to effect a cure. If the fact that this remedy is not sufficiently costly, should trouble the conscience of any member who should wish to recommend its use, I presume he might find some way of getting over this difficulty.

Black-wash, made with ℥ij of calomel to the pint of lime-water, I have found to be a most effectual remedy for "itching piles." I used it first in my own case, about twenty-five years ago, with entire success, and have recommended its use to many others, and have never found it to fail of giving immediate relief. In recent cases, two or three applications generally effect a cure; but in one case of two years' standing, I found it required about two months to effect a permanent cure, although it gave relief on the first application. This article has no effect that I know of on the other forms of piles, but only on what is technically called "itching piles."

A concentrated tincture (alcoholic) of pyrethrum root I have found to be the best ordinary remedy for toothache.

I think it will relieve quite as large a proportion of cases as creasote, and it is far more pleasant to use, not being liable to blister or make ugly sores in the mouth. It may be freely applied to the gums for ulcerated teeth, or in the ordinary way to the cavity, where one exists.

"Glyconin," a mixture of four parts yolk of eggs with five of glycerin, was recommended by some person, about five years ago, as a remedy for sore nipples. I have found it very useful in some of the phases of salt rheum, protecting the part from the action of the air, which is often painful.

I think it acts like collodion in shielding the parts. It is probable that the glycerin is absorbed, and a false membrane of albumen, which is extremely thin and pliable, is left on the surface.

Glyconin will frequently relieve the itching from an eruption

instantaneously. It will also relieve the smarting from "sunburn."

I find, however, that a much more elegant preparation, and one which does not color the skin, can be made by substituting the white for the yolk of the egg. I have reason to believe that this combination is equally efficacious with the other.

The white of the egg will combine in any proportion with glycerin, and the mixture keeps well. I think that many uses will suggest themselves to members and others for this combination.

The latter preparation might be called "white glyconin."

Anticipating that you will say that all my remarks have ended in smoke, I will introduce one more subject to your notice.

The vapor from roasting coffee is well known to be an excellent disinfectant, or at least deodorizer. I do not know of anything which will so quickly and effectually remove all unpleasant smells from a sick-room. It does not act by simply overcoming the odor by a stronger one, but the effect lasts long after the smell of the coffee has become imperceptible.

To facilitate the use of the coffee, I have used the following formula. A better one may, no doubt, be devised, but this I have found to answer the purpose.

FUMIGATING PASTILLES OF COFFEE.

℞. Fresh Roasted and Ground Coffee, . . ʒiv.
Potassæ Chloratis Pulv., ... ʒij.
Tragacanth. Pulv., ... ʒiv.
Syrupi Simplicis, ... ʒiij.

Make into conical-shaped pastilles of convenient size, and dry them without heat. The coffee should not be very fine; but perhaps a little finer than it is ordinarily ground.

II. MATERIA MEDICA.

NOTE ON THE EXPORTS OF VIRGINIA, A.D. 1610.

BY DANIEL HANBURY, F.R.S., F.L.S.

THE publication in London, by authority of the government, of what are termed *Calendars of State Papers*, and which are simply abstracts, classified and arranged, of the documents preserved in the State Paper Department of the Public Record Office, has opened to the student a mine of historical treasure. Thus in the volume for 1574–1660 (vol. i), Colonial Series, I found under date 1610, an abstract in six lines of a document instructing the colonists of Virginia what commodities they might most profitably supply to the mother country; and on going to the Public Record Office and requesting to be shown the original, the manuscript headed "*Instructions for suche thinges as are to be sente from Virginia*" was placed before me.

Thinking that the communication of this early production may interest and amuse the American Pharmaceutical Association, I have made a copy of it,* which I subjoin, together with a few explanatory remarks of my own.

Instructions for suche thinges as are to be sente from Virginia.—1610.

1. Small Sassafras Rootes to be drawen in the winter and dryed and none to be medled wth in the somer and yt is worthe 50£ and better, ℔ Tonne.

2. Baye Berries are to be gathered when they turne blacke, to be layde abroade, and dryed, and then putt in sackes, or caske, or for wante of bothe to be tourned into the Howlde and is worthe ℔ Tonne 12£.†

* The spelling and punctuation of the original are strictly retained.

† Not the *Bay Berries* of modern pharmacy, produced by *Laurus nobilis*, L., but those of the *Wax Myrtle*, *Myrica cerifera*, L. I have not been able to find out to what use they were thought applicable. In the printed document following these "*Instructions*" (see p. 494), they are termed *Berry Graine*, and reported as worth 2*s.* 6*d.* per pound, and "the powder of graine," 9*s.* per pound.

3. Poecone to be gotten from the Indians and putt up in caske is worthe ℔ Tonne 100£.*

4. Galbanu groweth like fennell in fashion, and there is greatest stoare of it in Warriscoes countrye where they cutt Walnut-tree laste. You must cutt yt downe in Maye, or June, and beinge downe yt is to be cutt into small peeces, and brused and pressed in yo^{r} small presses w^{ch} were sente over for oyle, or any other like presses, the yvice [juice] thereof ys to be saved, and putt into caske w^{ch} wilbe worthe here ℔ Tonne 100£ at leaste.†

5. Sarsaparilla [*sic*] is a roote that runneth wthin the grounde like vnto Licoras, w^{ch} beareth a small rounde leafe close by the grounde, w^{ch} beinge founde the roote is to be pulled vp and dryed and bounde vpe in bundles like ffaggotts, this to be done towardes the ende of somer before the leafe fall from the stake: and yt [is] worthe here ℔ Tonne 200£.‡

6. Wallnutt oyle is worthe here 30£ ℔ tonne, and the like ys chesnutt oyle, and chechinkamyne oyle.

7. Wyne a hoggeshead or twoe sower as yt is would be sente for a sample, and some of the grapes packed in sande.

8. Silke grasse accordinge to a note formerlye given my lord would be sente in good quantetye.§

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* *Poecone*, the root of *Lithospermum canescens*, Lehm., now called *Common Puccoon*, or *Alkanet*, said to be still used by the Indians for painting red. On its first discovery, it was evidently thought a remarkable dye, which might take the place of madder. Thus we find Strachey in his *Historie of Travaile into Virginia Brittania*, believed to have been written about A.D. 1616, mentions "*Pocones*, a small root which being dried and beat into poweder, turneth red, and this they use for swellings, aches, annoynting their joynts, paynting their heads and garments with yt, for which they accompt yt very pretious and of much worth."

† What is the "*Galbanum*" here referred to? And to what uses could the liquid juice of a plant "like fennell" be applied?

‡ This reference to sarsaparilla would indicate that the root of some indigenous species of *Smilax*, or more probably that of *Aralia nudicaulis*, L., was at one period exported from Virginia. The printed list of commodities which I shall shortly notice, enumerates both "*Salsa Perilla wild*" and "*Salsa Perilla domestick*." In the minutes of a court for Providence Island (Bahamas), December 13th, 1638, orders are given for the sale of a quantity of sarsaparilla brought from New England.

§ *Silk Grass* or *Camock's Flax*, the latter name from Captain Thomas

9. Bever Codd is likewyse to be cutt and dryed and will yealde here 5*s.* ℔ lb.

10. Bever Skynnes beinge taken in Winter tyme will yealde good proffitt the like will Otter Skynnes.

11. Oake and Wallnuttree is beste to be cutt in the winter, the oake p^re^sentlye to be cleaven into clapboorde, but the walnuttree to be lett lye.

12. Pyne trees, or ffirre trees are to be wounded w^th^in a yarde of the grounde, or boare a hoale w^th^ an agar the thirde pte into the tree, and lett yt runne into anye thinge that maye receyue the same, and that w^ch^ yssues owte wilbe Turpentyne worthe 18£ ℔ Tonne. When the tree beginneth to runne softelye yt is to be stopped vp agayne for p^re^serveinge the tree.

13. Pitche and tarre hath bene made there and we doubte not but wilbe agayne, and some sente for a sample, your owne tournes beinge firste served.

14. Sturgion w^ch^ was laste sente came yll conditioned, not beinge well boyled, yf yt were cutt in small peeces, and powdred putt vp in caske, the heades pickled by themselves and sente hether yt woulde doe farre better.

15. Rowes of the sayd Sturgion make cavearie accordinge to instructions formerlye given.

16. Soundes of the sayd Sturgion will make Isinglasse accordinge to the same instructions. Isinglasse is worthe here 6£ 13*s.* 4*d.* ℔ c. and cavearie well conditioned is worthe 40*s.* ℔ c.

Following these manuscript "*Instructions*," and bound up in the same volume with them, is a small printed pamphlet of four pages, without title-page or date, but presumed to be of 1610, indorsed in manuscript, "*The Booke of the Commodities of Virginia.*" It is a list of fifty or sixty articles, headed, "*A valuation of the Commodities growing and to be had in Virginia; rated as they are there worth*," and enumerates the following:

Iron, Silke Coddes, Raw Silke, Silke Grasse, Hempe, Flaxe,

Camock, of New England, "for his honor and encouragement," is constantly referred to in the colonial records, especially in connection with the Bahama Islands. By "my lord" is doubtless intended Lord de la Warr.

Cordage, Cotton Wooll, Hard Pitch, Tarre, Turpentine, Rozen, Madder, Woad, Annis-seeds, Sugar ("Powder Sugar, Panels, Muscavadoes and Whites"), Sturgeon and Caviare, Salt, Masticke, Salsa Perilla wild ("five pounds the hundred"), Salsa Perilla domestick ("ten pounds the hundred"), Red Earth Allenagra, Red Allum called Carthagena Allum, Roach Allum called Romish Allum, Berry Graine ("two shillings sixe pence the pound: the powder of graine, nine shillings the pound: it groweth on trees like Holly berries"), Masts, Pot-ashes, Sope-ashes, Clapboord, Pipe Staves, Rape-seede Oyle, Saffron ("twenty shillings the pound"), Honey, Shomack, Fustick young, Fustick old, and various sorts of Skins.

There are also these general directions addressed to the new colonists:

"Sweete gums, roots, woods, berries for dies and drugs, send of all sorts as much as you can, every sort by it selfe, there being great quantities of these things in Virginia, which after proofe made, may be heere valued to their worth. And particularly, we have great hope of the Pocoone roote, that it will prove better than madder."

The pamphlet concludes as follows:

"Pearles of all sorts you can finde: Ambergreece as much as you can get: Cristall rocke: send as much as you can, and any sort of Minerall stones or earth that weighs very heavy.

"Preserve the Walnut trees to make oyle of, and cut them not downe: so also preserve your Mulberry and Chesnut trees very carefully.

"In the moneth of June, bore holes in divers sorts of trees, whereby you shall see what gums they yeeld, and let them be well dried in the sunne every day, and send them home in very dry caske."

ON THE PRESERVATION OF HERBS.

BY JOSEPH HARROP, LEAVENWORTH, KANSAS.

If we will look but for a moment at the present condition of the herbs of the Pharmacopœia, or of those which are commonly kept on hand and for sale by apothecaries, we cannot fail to discover their proneness to rapidly deteriorate, possessing as they do, the greater portion at least, volatile principles. As we look for some mode or contrivance the better to preserve or retain their medical properties, we fail to see that anything has even been attempted in this direction. As we further examine their physical condition, we see them pressed and put up in ounce, quarter, half, and pound paper packages. This adds only to the convenience of storing and selling.

Since the earlier style of pressing, which style is almost universally adopted, we see but one move in the direction of progress. A Boston firm has changed the style of package, and improved generally in their quality and appearance.

As we consider this subject, our only wonder is that something has not long since been done towards securing the better preservation of these herbs. That the herbs commonly sold are almost entirely worthless, no intelligent pharmacist can doubt. We speak more especially of our own section, knowing as we do the existing condition of the trade in this particular. The better to illustrate these statements, we have procured a number of specimens of herbs as found in some of the principal stores in our locality, wholesale and retail, which is, to a considerable extent, the source of supply to the adjoining country, especially south and west.

Judging from the condition of some of these specimens, it would be hard to arrive at any reasonable date of their age. In most cases it will be found that they have lost almost all their characteristic odor and taste, as well as the green color which they once possessed. If we would endeavor to ascertain their probable age by reasoning from appearance, &c., as is the manner of the geologist, we could, we think, on as good grounds,

claim for them, if not thousands and millions of years, at least years, and even tens of years.

Suppose we thus endeavor to reason the probable length of time from the year the plant is grown, until the prepared drug is sold to the consumer. The producer and preparer always has a stock on hand. Of course he will sell all of the previous year's stock before he begins on the present year's. Here we have herbs of one year, or at least near one year old at the inside. The jobber then purchasing will keep them on hand from one to two years. Then suppose they are not sold again to another jobber, but directly to the retail dealer, which is by no means the rule. We have herbs from one and a half to three years of age. But this by no means is the worst part of the story. The retailer, although he purchase but a small quantity at one time, as he surely ought, begins with herbs of no tender age, and although it is true that some herbs sell rapidly, most of them are called for very seldom, but still must be kept on hand. And it is not difficult to see how old age creeps slowly but surely on.

The writer has known herbs to be kept for three years—old when he first saw them—and part of the same still on hand at the end of that time. Thus we have endeavored to present to this Association the abuse that is suffered in this direction. Surely this is no difficult task.

And now we may be permitted to offer a few suggestions as regards their preservation. Those who are like our more advanced apothecaries of the larger cities, may afford to purchase nicely fitted japanned and labelled cans for this purpose; not so, however, with the great mass. The next best thing would appear to be tin-foil or tin-foil paper, composing entirely or in part the wrapper for each package. Recent experiments with this substance appear to warrant this conclusion. Of course this would increase the cost per pound of articles treated in this way. But when we speak of cost in this connection, we can truly say of the herbs now in the market (the greater part we mean), *they are too cheap to be good*, or perhaps with more force, *too poor to be cheap at any price.* If there shall be found any reasonable objection to this mode, then we would suggest that each and

every package shall have printed on the wrapper the year in which the same was grown, so that after the first or second year, as shall be determined in regard to the different kinds, they shall be deemed unfit for medicinal use, and be rejected as useless. The wide difference between the wholesale price per pound, and the retail price per ounce package, will freely admit of such action. That some such rule or rules as the foregoing should govern the officinal directions or definitions in our national standard will appear plainly to be a duty, and a positive necessity.

September 6, 1871.

NOTE ON RHUBARB.

BY EDWARD R. SQUIBB, M.D.

THE New York market for rhubarb has been well supplied throughout the past year, and the prices very much lower than for many years. The lower grades of quality, though still largely in excess of the better kinds, have materially improved in character, while the higher grades have never been altogether absent from the market. Indeed, it has only been the choice varieties that were scarce or difficult to obtain, and often absent from the market. The demand for the better qualities has greatly increased, with much larger quantities sold at profits as good as in the lower grades; while some of the very lowest grades of damaged and worm-eaten stuff have been more rarely seen.

This very decided improvement in the market appears, however, to have an offset in the great abundance and low prices of powdered rhubarb. The smaller demand for the lower grades of all, and their partial disappearance from the market, suggests that it has not been found so profitable to bring them here as heretofore, whilst the fact of their being comparatively less salable, also suggests that they may have been converted into the more salable condition of handsome-looking powders, where damage and worminess are hidden.

At the present time the package prices of rhubarb in the hands of real importers have a range from 40 cents up to $2 per pound, whilst powdered rhubarb of comparatively uniform appearance—that is pretty nearly all alike in sensible properties—is offered and sold by jobbers at prices ranging from 35 cents to $1.50 per pound. The prices for powdered rhubarb are lower than for unpowdered, whilst there is no powdered rhubarb in the market that in appearance at all represents the lower grades of the unpowdered root.

There is good reason to believe that the art of making good-looking powdered rhubarb, both at home and abroad, has been carefully studied and improved within the past few years. The clumsy and easily detected devices of turmeric, ochre, and other coloring substances, have largely if not entirely, given place to refinements and cultivation in the arts of drug powdering, and the writer believes that a use has been here found for the root of the bright-colored, non-medicinal varieties of rhubarb, cultivated in Europe and in this country. Much Austrian rhubarb, and the modern representatives of the old "Banbury rhubarb," in general, are bright and handsome in color and texture, and make a powder which is too bright until "toned down" by the damaged and discolored grades of the medicinal varieties. Some years ago, large quantities of the common garden rhubarb or pie plant, were planted and cultivated for the purpose of making wine, and for several years the annual crop of spirits from these roots were converted into rhubarb wine, before it was discovered that this wine was unstable and unprofitable. Like the speculative mulberry fever it failed and died out, but unlike that, it left the roots behind, and these, it is believed, by age and maturity, came to be a source of profit, and are reproduced as an adulterant of the medicinal varieties of rhubarb; and an adulterant admirably adapted to deception and very difficult to detect. The writer has seen samples of this mature garden or wine rhubarb, which were exceedingly handsome, and which, except for being too handsome, and of too fine a texture, would have deceived him as to its true character, yet this variety is either entirely devoid of or very feeble in medicinal efficacy.

Now that foreign rhubarb is free from duty, and this garden rhubarb abundant and cheap, it might be inferred that powdered rhubarb could be produced in this country so cheaply as to defy competition from abroad. Yet within the past year, large quantities of powdered rhubarb, chiefly from Great Britain, have been offered for entry at the New York Custom House, and it is a prominent object of this note to attract attention to this fact.

Whilst the writer is an earnest opponent of a general tariff, on either theory of protection or revenue, he is also an earnest advocate for the greatest possible obstruction to the overflow from foreign markets into this country of their surplus refuse and damaged *medical* supplies. The arguments for *unobstructed* as well as *free* trade, do not apply with equal generalization, nor with equal force to medicinal merchandise and trade, as they do to general trade, and hence the very great value of even the present imperfect and inadequate drug law, to the best interests of the drug market, in the judgment of the writer; and this influx of powdered rhubarb whose quality cannot be determined in any easy way, is an excellent illustration of the effect of such obstruction by law. Early in the year the special examiner of drugs for this port of entry, took the ground that the fitness of powdered rhubarb to be admitted to entry under the drug law, could not be determined by the means which the law placed at his disposal, and he very properly resorted to expert testimony from outside of his office, to aid him at arriving at proper and just decisions. The writer was among those who were consulted by him, and samples from many invoices offered for entry have been examined by the writer within the year, and not a single one has been found that was considered fit for medical use. From the very first the writer has earnestly urged the special examiner to reject all powdered rhubarb; and all other powdered drugs whose quality cannot be easily determined by some simple and easy process of assay. And farther, to throw the onus and expense of all such processes of assay upon the importer of the powdered drug.

The importation of any drug in powder is *prima facie* evi-

dence that there is something to be concealed by the condition of being in powder, and this evidence should be taken as overbalancing all other evidence in the case of medicinal substances, until it can be annulled by proof to the contrary. Such proof, in the case of rhubarb, and many other drugs, is so nearly impossible as to be quite impracticable, and therefore the only line of safety for such articles is total exclusion.

The testing of powdered rhubarb presents so many difficulties, and is such a difficult and tedious matter, and the results are so far from being accurate demonstrations, that, as above stated, the testing is impracticable for the pharmacist. To establish the absence of turmeric, ochre, &c., and to see nothing by the microscope, are either separately or together of but little value. Of still less value is the proportion of extract given to water and to alcohol. But the proportion of oxalate of lime, the examination of the exhausted residue, the amount of color, odor, and taste, given by one part to one thousand parts of alcohol, in comparison with a similar treatment of a well-known standard, are when taken together, more trustworthy. Yet after the application of all the tests that have as yet been proposed there must still remain a degree of uncertainity which can only be cleared up by the application of the drug in use. Then if it fails it is of course too late to correct the defects.

The drift of all this should lead to the conclusion, that it is never safe for the pharmacist to buy powdered rhubarb; and to this may be added the fact that rhubarb is not difficult to powder, is not necessary to have in very fine powder, and is not wanted very often, nor in very large quantities, by any dispensing pharmacist.

Brooklyn, August, 1871.

NOTE ON PAREIRA.

BY EDWARD R. SQUIBB, M.D.

Pareira Brava is a drug which has withstood the mutations of therapeutics and commerce for nearly two hundred years,

and it is a singular and significant fact, in view of its commercial history, that it has sustained a sound reputation with many critical observers.

It appears to have been introduced to European practice from Portugal, but its sources were Mexico, tropical South America, and the West Indies. Under a name so indefinite as "wild vine," or "bastard vine,"—the translation of the name Pareira Brava,—it is hardly possible that the markets should have always been supplied from the same plant, even after its botanical source was determined, and hence the varying descriptions of different authorities may be accounted for. The writer has been familiar with it, both in its use and in its market character, for more than twenty-five years, and for the last half of this period supposed he knew the substance with some degree of accuracy, as its appearance was more uniform than that of most drugs. It, however, never had more than a very general agreement with any of the descriptions given of it; and the almost universal testimony of those physicians who knew it best was, that although very efficient in the treatment of chronic diseases of the mucous membranes of the urinary passages, it was only useful when given in doses very much larger than those prescribed by the books.

It has so happened, that in the New York market the trade in this drug has been largely, though not exclusively, confined to one drug house, and its appearance, as met with here, is identical with occasional samples seen from other cities. Some ten years ago, the annual sales here did not exceed three or four hundred pounds, and the price was fifteen to twenty cents. A Portuguese merchant, stimulated by this high price, imported a lot of some ten thousand pounds, and unable to sell it except in small lots at the expected prices, stored it for a year or two. This was found to be expensive management of so bulky an article, and the lot was finally sold at eight cents, and supplied the market for years. Another lot of about half as much shared the same fate, and fell into the same hands. The fate of these two lots and the glut of the market, seems to have stopped importation entirely, and by 1871, when the annual sales had

reached three to four thousand pounds, the supply became exhausted. In resorting to foreign markets it was found scarce, and to be had only in small lots, and these, on arriving here, were held at seventy-five cents to a dollar a pound. In looking critically through one of these small lots as a purchaser, the writer was surprised to find nearly one-half of it so entirely different from any hitherto seen, that he rejected it, and at once pronounced it a fraudulent adulteration or substitution, made in the interest of the scarcity and high price, and carefully selected out for purchase that only which he had seen before. Some specimens of this supposed fraudulent Pareira were, however, taken for examination, and were found to agree well with some of the older descriptions. A plate given by Pomet in his History of Drugs, published in 1737, and a close examination of the structure, &c., convinced the writer that this was the true Pareira root, and that what he had heretofore seen was the stem.

In a critical review of the descriptions of Wood and Bache, and Pereira, these descriptions were found to apply to both, as nearly as such descriptions generally do to foreign drugs, but that they applied much better to the ligneous woody stem, which is comparatively insipid and probably inert. The root is very much darker, almost black externally, and both the annular and vertical wrinkles are very much larger and more prominent. It occurs in shorter sections than the stem, and gnarled pieces are found eight inches to a foot in diameter. The texture is far less compact than that of the stem, while the beautiful arrangement of the consecutive rings seen in a cross section, which requires a glass in the compact stem, is well seen with the naked eye in the root. The sweetish and afterward bitter taste of the woody stem is very feeble, and even when in the finest powder, it yields very little extract to any menstruum. The taste of the root is, however, very much stronger, and yields at least twice as much extractive matter to the menstrua. The specimens herewith presented illustrate the difference between the root and stem much better than any description, and will render further explanation unnecessary.

It thus appears that, for some twelve or fifteen years past, this market has been supplied with the comparatively inert stem, instead of the root of Pareira; and that the ideas of at least one careful purchaser had become so fixed upon the intractable woody stems, that when the roots did appear, they were very nearly rejected as a fraudulent substitution. The importations of this year thus far have come from the European markets in small lots, and have been a mixture of root and stem, but less of the root than stem, and the chief object of this note is to attract attention to the drug, and create such a demand for the proper root portion, that after the present scarcity is over, and the market comes to be again supplied direct, the stem may be rejected.

There is no doubt whatever as to the peculiar efficacy and utility of this drug within its legitimate sphere in therapeutics, and the wonder is that it has been able to sustain its well-tried and time-honored reputation upon the feeble medicinal properties of the stem.

Brooklyn, September, 1871.

ON WILD CHERRY BARK.

BY JOSEPH L. LEMBERGER.

Query 43.—The cold infusion of wild cherry bark sometimes varies considerably in color. Is this due to the time at which the bark is collected, or to what other cause?

In investigating this subject, several ideas have suggested themselves:

1st. The probability that the season or month in which the bark is gathered may control the peculiarity we meet with.

2d. If such is the case, it must be due to some principle existing to a greater or less extent according to the time of gathering.

In order to do justice to the query, it became necessary to

have the different seasons of the year represented in the bark to be examined, having no data at all upon the subject, although having frequently been examined, however, by some of our ablest pharmacists, with other objects in view. I therefore had carefully collected for me portions of the bark during every month of the year, bark of the root as well as of the tree or branches; and, after making an infusion, find a great diversity in the shades of color.

I have arranged them into three classes, *light*, *medium*, and *dark*, as follows:

Infusion of the Bark of the Tree of Wild Cherry.

	Light.	Medium.	Dark.
1st month, ...	January.	. . .	. . .
2d "	. . .	. . .	February.
3d "	. . .	March.	. . .
4th "	. . .	. . .	April.
5th "	. . .	. . .	May.
6th "	. . .	June.	. . .
7th "	. . .	July.	. . .
8th "	August.	. . .	. . .
9th "	. . .	September.	. . .
10th "	. . .	. . .	October.
11th "	. . .	. . .	November.
12th "	. . .	December.	. . .

The bark gathered in April, October, and November form the darkest preparations, that of the months of January and August the lightest, whilst the bark of the remaining months form various shades of medium dark, that of the month of September seeming to be the darkest. The result of experiments with the bark of the root vary considerably from those with the bark of the tree, and as the color of the infusion is decidedly light or dark, I have arranged but two classes, the light being a pale straw color, and the dark about the color of the darkest of the medium list of the bark of the tree.

Infusion of the Bark of the Root of Wild Cherry.

	Light.	Dark.
1st month, ...	January.	. . . .
2d "	February.	. . . .
3d "	March.	. . . .
4th "	. . . .	April.
5th "	. . . .	May.
6th "	. . . .	June.
7th "	. . . .	July.
8th "	. . . .	August.
9th "	. . . .	September.
10th "	. . . .	October.
11th "	November.	. . . .
12th "	December.	. . . .

The darkest seeming to be the months of May and October.

After precipitating the tannin out of the several infusions, and finding this principle to exist in the ratio of color, I have come to the conclusion, and give as the answer to the 43d Query, that the cause of the variance in the color of cold infusion of wild cherry bark is due to the existence of tannin in greater or less quantity, in proportion as the infusion is dark or light, and suggest that this difficulty or peculiarity can be avoided by due attention to the collection of the bark.

ON INSECT POWDER.

BY SAMUEL S. GARRIGUES, PH.D.

QUERY 38.—What is the mode of action of "Insect Powder," the flowers of Pyrethrum caucasicum or roseum, as an insecticide? And is there any American plant that possesses a like power?

IN regard to the mode of action of the "insect powder," we are led to the belief that the action must be through the breathing apparatus of the insect, the poisonous effects of the powders being produced by a volatile principle or oil. The powder seems to deteriorate by keeping, and parties who are extensive purchasers are in the habit of testing the quality of the "insect

powder" by putting some on the backs of roaches; if good, the roaches after a little while would become confused, turn over and die; also, flies put into a tumbler inverted over a paper having some of the insect powder on it, in a short time fall to the bottom dead. All the directions which accompany the different forms of putting up "insect powder," are particular in carrying out the fact that the powder should be dusted or driven into the cracks and crevices, or over the plants where the insects are found.

Like power has been said to be possessed by several American plants: unfortunately I have not had an opportunity of testing their qualities; all that I will be able to do at present is to give their names.

Leucanthemum vulgare, Lam. (ox-eyed daisy). Contranie states that it is a certain safeguard against fleas, destroying or driving them off in a short time.

Another writer says that the flowers dried and pulverized, and used as the Pyrethrum caucasicum had the power of destroying insects.

Maruta cotula, D. C.; Mayweed. Similar poisonous properties are ascribed to this plant. A decoction of the leaves of the plant it is said will destroy all species of insects.

ON THE SO-CALLED AFRICAN SAFFRON.

BY JOHN M. MAISCH.

NEARLY a year ago my friend A. E. Ebert sent me a sample of what had been offered in Chicago under the name of African saffron, and was in the hands of an agent of a New York house. I also procured from Breithaupt & Wilson, New York, a sample under the same name, and found the Chicago and New York so-called African saffron alike, namely, to be the florets of Carthamus tinctorius, Lin., the well-known safflower or dyer's saffron, but more broken than what we usually see under this name and that of American saffron; it is likewise more discolored. This

plant is originally indigenous to the East Indies, but is very extensively cultivated in Western Asia, Southern Europe, and Northern Africa, particularly Egypt. Whether this so-called African saffron was really imported from Africa or not, I have no means to ascertain; but it is not improbable, that with the staple drugs regularly shipped from Alexandria, Egypt, this lot of Carthamus may have likewise been exported in consequence of the failing supply from Europe and other places.

Through the kindness of Messrs. McKesson & Robbins, New York, I obtained three samples of so-called African saffron, two of which likewise proved to be Carthamus; one of these samples was on hand in New York, and offered at $3.50 per pound; the other, the better quality as far as could be judged from the small samples, was, previous to its arrival, offered at 75 cents per pound.

The third of these samples, representing thirty pounds, held in London, England, and for which offers were solicited, was *not* Carthamus; it consists of the corollas of a plant probably belonging to the natural order Scrophulariaceæ, which in their dried condition are of a dirty greenish-brown color; they are about one inch long, the tube being about one-tenth inch in diameter, and three-quarters inch in length, inflated in the throat and smooth, the limb somewhat bilabiate, one sterile stamen, with the filament nearly free, the fertile stamens didynamous. Infused in cold water they impart an intense yellow color to it. The total absence of calyx, pistil, and even style, renders it impossible to express an opinion as to the genus from which this so-called saffron may have been derived. It is unquestionably a new claimant for public favor as a dye-stuff, its unsightly appearance probably interfering with its successful introduction. It is too dark colored and too coarse in its structure to be used as a sophistication of or substitution for true saffron.

As far as my experience extends, the article which last winter was in the American market under the name of African saffron, was Carthamus, while about the same time a small lot of (probably) scrophulariaceous flowers were offered in the London market under the same name.

ON OLIVE OIL AND ITS ADULTERATION.

BY HENRY N. RITTENHOUSE.

QUERY 13.—To what extent are the oils of mustard seed, peanut, cotton-seed, or other oils sold for olive oil, and how can they be readily detected when so substituted?

To reply to the above question, as I imagine is desired by its framer for the information of this Association, would require an amount of time and skill that I am quite sure the writer could not give to it. This is not the first time in the history of olive oil that the same questions have been presented to the scientific as well as commercial world, and as far as I know without any very practical or valuable results that have been made public.

The query naturally divides itself into two parts; the first assumes adulterations of olive oil, and which assumption my inquiries lead me to believe are too well founded to admit of any doubt at all, the extent depending entirely upon the conscience of the dealer or the quality of the material at hand. During my inquiries in this connection I was surprised to find by the admission of dealers the great extent to which cotton-seed oil is sold for olive oil direct, or to mix with the genuine article. The magnitude of the transactions in olive oil in the American market, and the number of persons dealing in it, would prevent, however, even a reasonable guess being made as to what proportion of it offered for sale is pure or otherwise. By the addition of even so small a portion as ten per cent. of pure olive oil to a good cotton-seed oil a mixture is produced which has to the sight, smell, and taste all the characteristics of a really good olive oil, and by using a green or yellow oil any shade of color can be produced, and by adjusting the proportions a more or less decided olive taste and smell can be made. Refined cotton-seed oil is a beautifully clear yellow or colorless oil, specific gravity about .920. As a drying oil it is not so good as linseed, but as a burning oil is said to be equal to lard oil, and we know it is an excellent salad oil, either alone or mixed with olive oil to suit the taste. It is largely used for soap making, especially for so-called Castile; as a lubricator it is inferior to sperm or

petroleum. It will, no doubt, find some applications in pharmacy, though it does not make a lead plaster at all to compare with pure olive. Its principal use at this time seems to be for mixing with linseed, olive, and other fixed oils. The price of refined cotton-seed oil ranges in quantities from fifty-five to seventy cents per gallon, according to quality or condition of the market, while olive oil in bulk is double the above prices, showing a sufficient margin for the swindler to reap a rich harvest.

As a knowledge of the uses and value of cotton-seed oil are as yet comparatively limited, it seems to me there is scarcely a subject that could at this time be brought to the notice of this Association, that is likely to be of greater use to its members, and the community at large, than this oil. Having the characters described, and being a domestic product of practically unlimited supply, for it can be produced in immense quantities in the Cotton States, its future is bound to be an important one, adding vastly both to individual as well as national wealth, and will also find many uses which are now unknown.

I would suggest to every member of this Association, and in fact to every druggist in the land, not already familiar with the article, to procure a sample of refined oil, for the purpose of familiarizing himself with its properties.

I do not think it would be possible to answer with any exactness the first part of the question, as I have before remarked, for in addition to the reasons given, the purity of much olive oil is supposed to be tampered with before it reaches America. We know that cotton-seed, as well as the oil, are largely exported to various ports of Europe, where its fitness for many purposes has been discovered.

The following, copied from a trade circular issued in Liverpool, England, says: "The cotton seed of the Southern States has a great future before it, second only to the gigantic petroleum trade of the Northern States in importance. Its sweetness, utility, and price, are now commending it everywhere, and though in England we are manufacturing 20,000 tons annually

(chiefly from Egyptian seed), the quality is not to be compared to the American, as the following values will testify.

"The price of English, to-day, is £34, at which it is slow; the value of American £36 to £48 per ton, at which it is in strong demand. The range of quotations for American oils begins from the worst of it (which eclipses any of ours), to the best of it, that is from the ordinary yellow to the fine bleached. The bleaching of this oil is of the veriest importance, and whether effected by the sun, or chemically, will have a marked advantage from southern climes. Our consumption of it is practically inexhaustible; we use it for soap, for salads, for lubricating, and for burning, and the whole continent of Europe consumes it largely. It is sold by the ton of 2240 pounds, and if £3 to £5 per ton, be taken off the above quotations, producers may see at a glance the net profits on consignments to Liverpool, from the Southern and Western States of America."

Judging from the above that our foreign relations are fully awake to the value and application of cotton-seed oil, to many purposes specified, is it not fair to presume, for many also not alluded to, amongst which, its admixture with olive oil would be no insignificant one.

Extensive adulterations of olive with cheaper oils being admitted, the search for a ready and reliable test for its detection has long occupied the attention of many able chemists, as a reference to the publications of this Association alone will prove, and will also show that nothing definite or of real practical value has been accomplished in establishing such test. It is stated, however, that a chemist of Alexandria (Egypt), has been awarded a prize, for the discovery of a means of distinguishing the adulterations alluded to, but the name of the discoverer or his process are not given. (See Proc. Am. Pharm. Assoc., 1869, page 151.) Saponification with alkali or litharge, as in lead plaster, or solution of nitrate of mercury, I do not consider either ready or reliable as tests. From the attention that has been given to this subject by those immediately interested, an idea of the great importance of the desired information may be inferred. It may be there are those who could give

it, but it is not their interest to do so, and it has never been published. I do not see how this query is to be answered, except by a course of careful observations and experiments, which I have not been able to give it, and am therefore compelled to leave this portion of the query unanswered.

As to peanut oil, I have not obtained any information that is worth repeating here.

Mustard-seed oil is produced as a by product by the mustard makers; about 40,000 gallons are produced annually in the United States, and sells just as it is expressed from the seed, at from 80 cents to $1.05 per gallon. It is said to be used in perfumery and also for mixing with other oils.

PHILADELPHIA, August, 1871.

RENNET AND PEPSIN.

BY CLEMMONS PARRISH.

QUERY 1.—Are the preparations of rennet identical with those of pepsin, and can the former be prepared only from the fourth stomach of the calf?

A SOLUTION of commercial pepsin, 10 grains to f℥j, and a liquid rennet, prepared by the maceration of fresh calves' rennets in diluted alcohol, were separately raised to a temperature of 100° F. to 105° F. in a water-bath, and maintained at this temperature for about two hours, each in contact with 10 grains of coagulated albumen of eggs.

After this maceration, the undissolved residues were dried and weighed; that in the solution of pepsin weighed 4 grains, that in the rennet solution 6½ grains, showing that the former solution had dissolved about 6 grains and the latter 3½ grains.

A second experiment was made to ascertain whether solution of pepsin would coagulate the casein of milk. A small proportion of solution, prepared from one drachm of pepsin in four fluid ounces of water, acidulated with a fluid-drachm of hydrochloric acid, was added to fresh milk, in which it readily produced the reaction so familiar in the case of rennet.

In regard to the remainder of the query, it is well known that the fourth stomach of the calf and that of the hog are both used for the preparation of pepsin of commerce. I have made no comparative experiments upon these.

ON EXTRACT OF MEAT.

BY ALBERT E. EBERT, CHICAGO.

QUERY 3.—An examination of the extracts of meat of commerce; what is the actual nutritive value of the preparations, and how do they compare one with another?

THE first portion of this query being physiological in its character, your reporter consulted the recorded experience of investigators in this department of natural science. He finds that competent authorities differ widely in their estimation of the value of extract of meat as an article of nutrition; yet from all the facts reported it would seem to possess merit either as a nutrient or as an aid in the process of nutrition.

To the last section of the query, "How do they compare, one with another?" your reporter respectfully presents a tabular statement of the results of his examination of all the meat extracts readily procurable.

These examinations were made of specimens obtained in the open market; each was repeated to verify its accuracy, and is believed to fairly represent the value of each as obtained by consumers.

It will be seen by a reference to the tabular statement that a surprising uniformity exists in all specimens claiming to have been made by the Liebig process. The result of the examinations becomes of greater importance in view of the assertion by the Liebig Extract of Meat Company (Fray Bentos), that they alone properly prepare extract of meat by this process.

This assumption is shown to be untenable, as other manufacturers are furnishing products equally pure and reliable, the most prominent difference being that the labels of these

factors do not bear the sign manual of the inventor. The effect of this signature would seem to be to increase materially the cost without increasing correspondingly the value of the product. The fact has been established that the value of extract of meat depends on the proportion soluble in spirit of 80 per cent., and upon the residuum of incineration consisting chiefly of inorganic chlorides and phosphates. Upon this basis a statement is added to the table estimating the nutritive value of the specimen examined. It is also generally admitted that the presence of gelatine or its allied compounds in extract of meat is objectionable, as it induces destructive change, and possessing little if any nutritive properties, the net value of the product is thereby diminished in proportion to the amount of gelatine it contains. The organic matter insoluble in spirit referred to in the table is gelatine or its equivalent. It will be seen that those extracts containing a large proportion of such matter also yield a minimum quantity of ash, and thereby plainly give the answer to this query in showing the relative value of such meat extracts of commerce as the writer has been enabled to obtain specimens for examination.

There are, however, one or two extracts highly approved in the English market, namely, an Australian extract known as the "Ramorine," which, in the estimation of our English confrères who have studied the subject, stands possibly higher than any other imported articles, and an extract made by Messrs. Harvey & Reynolds, of Leeds, from English beef, which, at a higher price, commands a large sale in England. Samples of these I hope shortly to receive, and will report on them at a future opportunity.

Tabular Summary of Report on Extract of Meats.

	1	2	3	4	5	6	7	8	9
	Extractum Carnis, Liebig. Prepared by the Liebig Extract of Meat Company (limited), Fray Bentos, Uruguay.	Liebig's Extract of Meat, of La Plata. Prepared by A. Benites, of Buenos Ayres, South America.	Liebig's Extract of Meat, genuine. Prepared by R. Tooth, Sydney, Australia.	Liebig's Extract of Meat. Prepared by the San Antonio Meat Extract Company, San Antonio, Texas.	Liebig's Extract of Meat. Prepared by Harras & Schrade, Clinton, Texas.	Tourtelot's Concentrated Essence of Beef. Prepared by Tourtelot Bros., Chicago, Illinois.	Tourtelot's Concentrated Extract of Beef. Prepared by Tourtelot Preserving Company, Chicago, Illinois.	Tourtelot's Solid Extract of Beef. Prepared by Tourtelot Preserving Company, Chicago, Illinois.	Borden's Extract of Beef. Prepared by Borden and Currie Company, Elgin, Illinois.
Water, ...	19.343	20.000	18.563	18.979	20.550	28.500	22.594	19.188	20.250
Organic matter soluble in alcohol of 80 per cent., ...	57.047	58.321	56.688	58.989	56.605	37.063	46.375	7.187	17.406
Organic matter insoluble in alcohol of 80 per cent., ...	.829	.836	.624	1.045	1.200	27.312	23.250	57.000	54.500
Ash, ...	22.781	20.843	24.125	20.987	21.645	7.125	7.781	6.625	7.844
	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000
Estimated nutritive value, ...	79 828	79.164	80.813	79.976	78.250	44.188	54.156	13.812	25.250

III. CHEMISTRY.

NOTE ON LITMUS PAPER.

BY EDWARD R. SQUIBB, M.D.

THE rapid progress of medical science, and the consequent improvement in the art of medicine, renders the modern physician much more critical and accurate in his investigation and observation of diseased conditions; and for the means by which to attain greater accuracy and precision in his observations and researches he properly and naturally looks to the pharmacist. In this way, within the past few years, litmus paper has become an important, if not indispensable agent to the intelligent physician, and he often seeks it, but rarely finds it in the hands of the pharmacist. And when found, it is rarely of the quality or in the condition best adapted to his uses. When the physician and pharmacist buy litmus paper, they generally make the same mistake that the photographer does, and demand that it shall be deep in color; that the blue shall be very blue, and the red very red. This is wrong in principle and in practice, particularly for physicians' uses, where slight traces of alkalinity or acidity are often important, and the palest instead of the deepest paper should always be selected. The solution made from one pound of good litmus commonly requires about two hundred grains of concentrated sulphuric acid to saturate it up to the point at which the color *begins* to change to purple in its course toward redness, and this purplish tinge of pale blue, and the corresponding purplish tinge of pale red are the desirable colors, between which is the least margin of difference which is left undetected by the testing.

This large proportionate quantity of sulphuric acid indicates how comparatively roughly the carelessly made and deeply colored litmus papers fulfil their design; and it is the object of this note to indicate a better practice, and a better state of

knowledge on this subject. To prepare good litmus paper, the following formula may be useful:

Take of—

Good Litmus, in fine powder,	1 part.
Water,	4 parts.
Alcohol,	1 part, all by weight.

Put these ingredients into a bottle, and shake the mixture occasionally during twenty-four hours; allow the sediment to settle out completely, and decant as much as possible of the clear liquid into another vessel; then put the same quantity of water and alcohol upon the sediment, shake again, and when again well settled, pour off the clear liquid for use in diluting the first portion of liquid, or for dissolving a fresh portion of litmus. Separate about one-fourth part of the first clear liquid, and add to the remainder dilute sulphuric acid until it becomes of a purple tint, or gives a purplish-blue color to a slip of white paper; then add about one-half of the separated fourth part of the solution, and if this should entirely restore the original pure blue color, again add diluted acid until a purplish tint is again obtained; then add the remaining eighth part of the original solution to restore the pure blue color, or which is more delicate as a test for acidity, a very faintly purple-blue color; then dilute this solution either with water, or with the second liquid from the litmus sediment until a slip of neutral white paper dipped into it has a pale blue, or pale purplish-blue color. Here it is necessary to remember that this paper when dry, is many shades paler than when wet, and the dilution should be made accordingly. The solution for making red litmus paper will not bear the same amount of dilution as that for the blue, and must be made of the proper purplish-red color by the addition of dilute acid, before dilution. The solutions so made will keep almost indefinitely, and may be passed on from one process to the next. The paper should be made from pure rag stock—not from bleached wood nor straw—should be quite white, and above all, must be quite neutral, and show no red spots or blotches when moistened with the blue solution. French or German filtering-paper commonly answers well if of good qual-

ity. This is cut into convenient size, the larger the better, because there is less waste, and held by two corners, which corners are to be kept dry; it is to be skilfully laid on the surface of the solution, first one side and then the other, then drained, and hung over clean glass tubes to dry. The vessel to hold the solution for dipping should be larger than the sheet of paper, and shallow.

The sheets when dry are laid together, and the edges trimmed off all round. They are then cut into sheets three to four inches wide and twelve to eighteen inches long, according to the size of the paper used. What is sold as "a sheet of litmus paper," should never be less than four inches by twelve, or three by eighteen. Such a sheet cut lengthwise through the middle, gives a strip which when cut crosswise into strips a quarter or three-eighths of an inch wide, is of a very convenient size and form for use. The sheets, one paler and one deeper of the same color, if desired, should be rolled up together in a tight roll, slipped into a test-tube and corked. An ordinary five-inch test-tube holds the sheets conveniently, and one such tube of the red and one of the blue, properly labelled, forms a convenient pair, such as is supplied to the U. S. army, by the writer. Formerly these sheets were enveloped in tin foil, but though they thus keep much better than in paper, they are when pale and delicate very liable to be changed and spoiled by the alkaline and acid vapors in the air. In corked test-tubes they keep unchanged for an indefinite time, while the test-tubes and corks when empty are always worth their cost to those who use litmus paper.

In this form of sheets, however, the paper is not so convenient for the physician as when cut into strips one to two inches long and a quarter of an inch wide, and the writer finds that about one hundred of such strips, put up in a wide-mouth tube vial, corked and properly labelled, is a most convenient and popular form for physicians' use. One such vial of each color put up together forms a pair which no physician should be without. And most physicians will buy them if they can get them. These convenient little strips may be shaken out of the vial as wanted

for use, but as the fingers should, by rights, never touch any other strip than the one taken, it is best to take them from the vial by a pair of forceps from the physician's pocket-case.

BROOKLYN, August, 1871.

AN APPARATUS FOR PREPARING LIQUOR AMMONIÆ FROM SULPHATE OF AMMONIA.

BY C. LEWIS DIEHL.

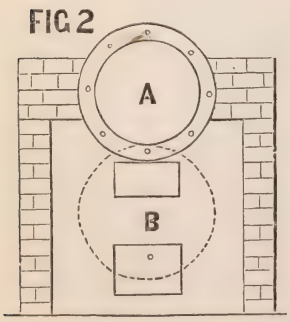
WHEN I took charge, in 1865, of the re-establishment of the Louisville Chemical Works in the interest of a wholesale drug firm of this city, it devolved upon me to devise, among others, an apparatus for preparing aqua ammoniæ. I had previously become familiar with a number of apparatus for this purpose, and had read about various forms, but none of them seemed to answer my purpose. Our object was

1st. To manufacture from sulphate of ammonia a pure article of the various commercial grades of aqua ammoniæ, viz.: Aq. ammoniæ, 16° (corresponding to the officinal water of ammonia), liq. ammoniæ, 20° (containing about 15 per cent. of gaseous ammonia), and liquor ammoniæ concent. U. S. P. (26° commercial).

2d. To construct such apparatus with a view to the most convenient removal of the sulphate of lime formed during the process.

3d. To prepare the three above-mentioned grades of liq. ammoniæ in the same apparatus, and if possible, at one operation.

In this I finally succeeded by designing the apparatus shown by Figs. 1, 2, 3, and 4. The cylindrical boiler, A, and manhead, B (Fig. 2), presented all the conveniences for the introduction of the caustic lime and removal of the sulphate of lime formed. The washers (Fig. 3, and F′ F″, Fig. 1) in their arrangement served the purpose of purifying the ammoniacal gas to a nicety. The worm, G (Fig. 1) served to cool the gas and to condense any aqueous vapor passing over, the liquid ammonia formed escaping into a suit-



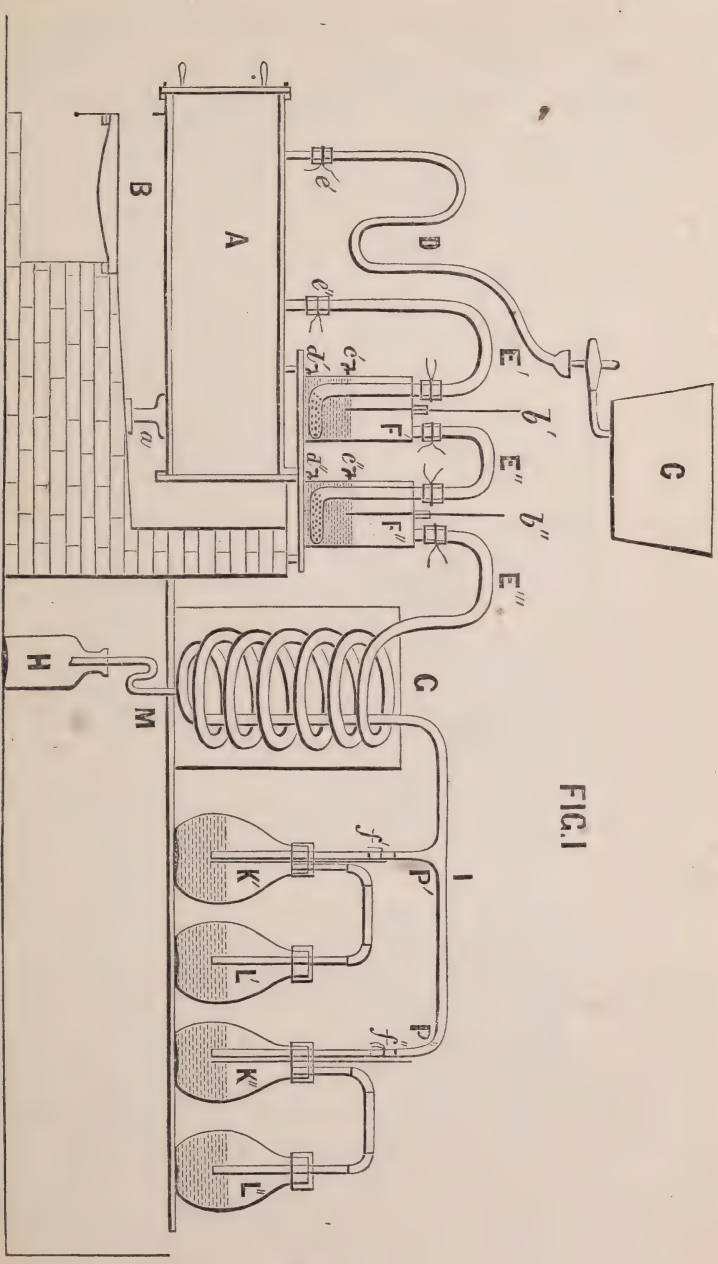
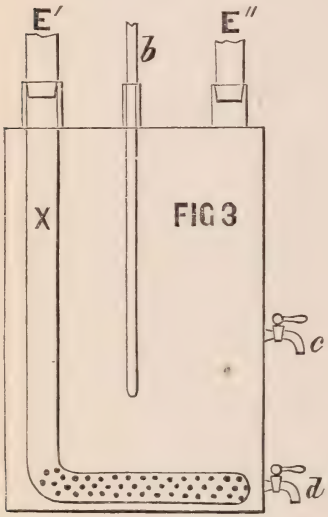
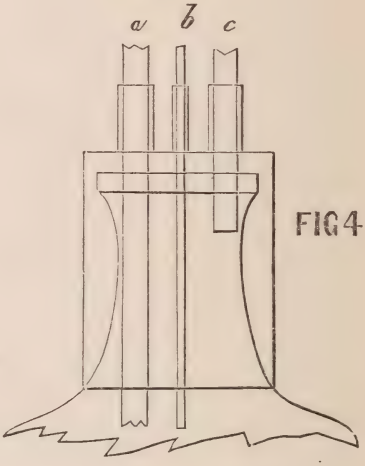


FIG. 1

able vessel, H, by means of the trap, M, forming an abundance of liq. ammon. concent.; while the cooled gas by means of the return-pipe and connection, I, and branches, P′ P″, passed into bottles, K′ K″, and from these into bottles, L′ L″, forming in K′ K″ aqua ammoniæ, ranging in strength between 16° and 20° (10 and 15 per cent.).





By referring to the accompanying illustrations, the following description of the operation and apparatus will become intelligible.

The retort, A, is cast-iron,* six feet long by twenty inches high, internal measure; walls of one inch thickness with two inch flanges at both ends; closed on the rear end permanently by a disk of cast-iron of one inch thickness, and furnished in front with a similar disk, which is bolted on after each operation, and after the application of a thin coating of clay as luting. The surface of the flange and of the disk—or better, man-head—are turned off smooth, and the latter is provided with a handle,

* The only trouble experienced by me with cast-iron for a retort consists in its liability to crack by the heating. It is suggested that a retort of thick sheet-iron, with cast-iron heads and flanges would obviate the difficulty.

to enable the operator to lower or close it with facility, the lowest bolt not being removed. The fire-place is arranged as shown at B, Fig. 1, and is so constructed that while three-fourths of the diameter of the retort is inclosed by brickwork, fully one-third is exposed to the flame. The retort is supported in front by the cast-iron furnace front, and in the rear by a small cast-iron pillar, *a*. The feed-pipe, for solution of ammonia, D, of one-inch lead pipe, shaped so as to form a trap, is attached at *e'* to a permanent iron pipe, about six inches high, by means of clay luting and bladder or canvas wrapping, and is supplied from a 20-gallon tub, C, by means of a wooden faucet with lead pipe connection, the tub being elevated about four to five feet above the surface of the retort. The exit of the gas is through the two-inch lead tube, E', to the bottom of washer F' (which is filled with water to the cock, *c*); from F', by tube E'', into washer F'', and from this, by E''', into the coil, G. The construction of the washers is best shown by Fig. 3; they are made of thick tinned iron, twelve inches in diameter by eighteen inches high, with washing-tube of two-inch lead pipe, bent at right angles, and perforated with numerous one-eighth-inch holes in its shorter arm, and permanently soldered in, provided with safety-tube, *b*, of one-eighth-inch glass, and brass cocks at *d* and *e*. The exit-tube, E''', Fig. 1, and coil, G, and its connecting pipe, I, and branches, P' P'', are of block tin pipe; E''', G, and I, of one-half inch, P' P'' of three-quarter inch pipe. The trap, M, in coil G, is made of one-half inch block tin pipe; the branches, P' and P'', are connected to glass tubes of three-quarter inch diameter at *f' f''*, by rubber tubing, the glass tubes reaching into the absorbing-bottles, K' K'' (ordinary carboy bottles), an inch below the surface of the absorbing liquid. The arrangement of the caps for bottles K' K'' is best shown by Fig. 4; they are made of tinned iron, and a tight joint is effected by means of bladder wrapping; *a* is the absorbing-tube, *b* is the safety-tube, of one-quarter inch glass tubing, and *c* is the exit-tube into bottles L' or L'', which are loosely covered with tin caps properly perforated.

The apparatus is prepared for the distillation by introducing

into the retort one hundred pounds of the best unslacked lime, and securely luting and bolting on the man-head. The washers are filled to the cocks c' c'' with water, while into each one of the carboy bottles (K′, K″, L′, or L″), five gallons of distilled water, or six gallons of weak ammonia water from a previous operation, is introduced. The joints being all securely wrapped, a solution of one hundred and twenty pounds of good sulphate of ammonia in thirty gallons of water (previously prepared and strained) is allowed to flow in from tub C by trap D, and the apparatus is allowed to stand until next morning. Early in the morning (say 7 o'clock), a small fire is made under the retort, and either increased or decreased as may be indicated by observing the safety-tubes in the washers. The operation will proceed safely as long as the pressure is not sufficient to eject some of the wash water through the safety-tubes. Should the wash water be thus ejected, it becomes necessary to control the action either by dampening or entirely removing the fire. Towards noon, it is generally necessary to keep up a good fire, and usually, by 3 or 4 o'clock, gas ceases to pass into the absorbers, which is indicated by the rising of the ammoniacal liquid in the glass tubes of the absorbing-bottles, K′ K″. These bottles are then disconnected, by simply slipping off the India-rubber hose connecting them with the branch pipes, P′ P″, and the heating is continued as long as any distillate, strongly impregnated with ammonia, collects in the receiver, H (under trap, M). In the beginning of the process, very highly concentrated liquor ammoniæ collects in the receiver under the trap, the first four gallons usually between 20 and 30 per cent., subsequently about fifteen to twenty gallons of liquor ammoniæ, ranging, according to circumstances, between 10 and 15 per cent., and after that becoming much weaker. The process is usually finished towards 5 o'clock. The weak ammoniacal liquors are reserved for introduction into the absorbing-bottles for next day's operation, while those of sufficient strength from bottles K′ K″, and that collected by the receiver, are by judicious calculation adjusted to the desired strength. When the apparatus has cooled sufficiently, the sulphate of lime is with-

drawn, the wash water is drawn off by cocks, *d' d''*, and added to the solution of sulphate of ammonia, for the next operation, and the apparatus is again prepared as described above.

Liquor ammoniæ of excellent quality and of the various grades in demand has been prepared by me with this apparatus for several years, at prices competing with the lowest, and yet yielding a handsome profit.

Shortly after the closing of the World's Exposition at Paris, the precise time I do not recollect, a member of the Commission sent to represent our Government, to whom I had been obligated for many courtesies that I remember with gratitude, solicited a working drawing of the apparatus above described, together with the details of its employment. I was pleased to be in a small measure permitted to make a return for the courtesies extended to me, and unhesitatingly furnished the drawing, &c., as desired. But what was my surprise when I found this apparatus illustrated and described according to the drawing and details given by me, in the report of the Commissioners to Government, in which he claimed the same as having been designed and used by him several years before. I had commenced this paper, and had intended it for the Chicago Pharmacist and Chemical Record, had spoken with Mr. Sargent, then its editor, upon the subject at least a year before the Commissioners' Report appeared in print, and had only abstained from publishing it at the time on account of some objection made by the editor of the Pharmacist as to the space required for the illustration. By this report I was put to the unpleasant alternative of either giving up all claim to whatever merit there may be in the combination of the apparatus, or to assume the unpleasant task of appending this explanation to my paper. Simple justice to myself seemed to demand the latter, and I have done so in all kindly feeling to the U. S. Commissioner, who, I sincerely hope, had omitted to correct the printer's proof-sheets.

In conclusion, I would say that there is, perhaps, not a single part of the apparatus that has not been used for the same or a similar purpose. The only merit, if any, claimed, is for a judicious combination of its parts, to serve the purpose intended.

Louisville, Ky., September, 1871.

NOTE ON THE COMMERCIAL BICARBONATE OF SODA.

BY E. R. SQUIBB, M.D.

THE writer having recently had occasion to supply some bicarbonate of soda to the medical department of the U. S. army, examined the popular brands found in the New York market, with the results given in the following table.

The French bicarbonate is not associated with the name of any particular maker, but is simply known as "French Bicarbonate of Soda." It appears to be imported in cases of one to three hundred pounds each, but is at once transferred into boxes of twenty-five and fifty pounds each.

The English is generally imported in kegs of one hundred and twelve pounds each, and the products of four different makers are met with in the market; those of Chance Brothers, of Birmingham, and C. Allhusen & Sons, of Newcastle-on-Tyne, being perhaps the most common.

The American varieties are from well-known makers of good standing, who produce large quantities, and perhaps fairly represent the manufacture in the United States. Their products are found in kegs and boxes, and very often put up in printed wrappers containing a pound, a half pound, or a quarter of a pound each, with directions and formulas for use in cooking.

The largest proportion by far of all these varieties is used in cookery and in the arts, and but a very small proportion in medicine and pharmacy. But as hygiene is a most important part of applied medical science, pharmacy becomes responsible for the character of the bicarbonate of soda which is used in the preparation of food, as well as for that used therapeutically.

It is made in enormous quantities, and always in connection with other salts of soda, from the chloride of sodium and the carbonate and sulphate of soda. The average annual import of this article is about 21,000,000 pounds, or more than half a pound for each inhabitant of the United States, and the average cost in gold is about 3 cents per pound. Upon this import a duty of $1\frac{1}{2}$ cents gold per pound is charged. Thus in the ag-

gregate each inhabitant of the United States is annually taxed three-quarters of a cent in gold, to support and protect the pecuniary interests of not more than five or six manufacturers of this article in the United States.

Various sources of carbonic acid are made available for converting carbonate of soda into the bicarbonate, and the odor of the brewer's fermenting vat, which was one of the old sources, is still occasionally recognized in some chance samples of the salt.

When properly made it consists of:

Oxide of Sodium, NaO, . .	31.2 parts,	or	37.05	per cent.
Carbonic Acid, $2CO_2$, . .	44.0 "		52.20	"
Water, HO, ...	9.0 "		10.69	"
	84.2 "		100.00	"

Both the United States and British Pharmacopœias direct that the officinal preparation shall have this composition, and both give formulas for its preparation, and tests which reject all other combinations of its elements. With the present value of labor and struggle for life, it is quite unreasonable for the Pharmacopœias to expect any pharmacist to make so cheap an article, and, therefore, the officinal formulas and processes are useless. The descriptions and tests given are also comparatively useless, because they are hypercritical, and in a large proportion of instances would even exclude the products of their own formulas and processes. It is very difficult and wasteful, particularly in operating on a large scale, to entirely saturate the carbonate of soda with carbonic acid, and the attempt was practically abandoned long ago as the article came to be needed in such large quantities. A maximum economical limit was soon attained, accepted as sufficient, and became established; and upon this rather than upon theoretical perfection, the description and tests of the Pharmacopœias should be based. Competition in market price, with careful protection of profits, has, however, a constant tendency to run down quality, and against this the Pharmacopœias should exert all their influences.

Commercial Varieties of Bicarbonate of Soda from the New York market, 1871.

Make or Brand.	10 Grammes dried over SO_3 for 75 hours, loses	Solubility of one part in water at 25° C. = 77.5°.	Solution.	Loss on heating one gramme should be 0.368, or 36.8 per cent. The actual loss is	Color of Bunsen flame in which the sample was heated.	84.2 parts should yield on saturation 44 parts CO_2. The actual yield is	Chlorides in the sample.	Sulphates in the sample.	Currency price in quantity per lb.
French, ...	0.008	10 parts.	Colorless. Transparent. Very slight residue.	0.355, or 35.5 p. c.	Slight yellow tinge.	40.3	Faint trace.	Faint trace.	12c.
French, ...	0.007	10 parts.	Nearly colorless. Transparent. Very slight residue.	0.349, or 34.9 p. c.	Slight yellow tinge.	39.4	Faint trace.	Faint trace.	10c.
English, Chance's, .	0.006	10 parts.	Nearly colorless. Transparent. Slight residue.	0.354, or 35.4 p. c.	Yellow tinge.	40.2	Faint trace.	Faint trace.	8c.
English, Allhusen's,	0.007	10 parts.	Nearly colorless. Transparent. Slight residue.	0.353, or 35.3 p. c.	Yellow tinge.	40.3	Faint trace.	Strong trace.	5½c.
American, Kidder's,	0 008	10 parts.	Nearly colorless. Transparent. Slight residue.	0.347, or 34.7 p. c.	Yellow tinge.	38.7	Strong trace.	None.	10c.
American, Dwight's,	0.046	10 parts.	Colorless. Milky. Considerable residue.	0.338, or 33.8 p. c.	Yellow flame. Salt fuses.	38.5	Dense precipitate.	Dense precipitate.	5c.
American, Church's,	0.050	10 parts.	Nearly colorless. Milky. Considerable residue.	0.339, or 33.9 p. c.	Yellow flame, Salt fuses.	38.5	Dense precipitate.	Dense precipitate.	5c.

In addition to other information given in the above table, it will be seen that all the varieties are deficient in carbonic acid. That is to say, not one of them is really bicarbonate of soda. The best brands are deficient in carbonic acid by about one-eleventh part of what they should contain, or about 9 per cent. of the normal quantity, whilst the other brands are much lower. And although it may be impracticable to get a full bicarbonate by the large manufacturing processes, yet all of them should come nearer to it than they now do, and will come nearer to it if a critical demand at better prices should arise.

All the tests necessary to a critical discrimination are indicated in the table, and all are simple and easy of application. But those of greatest practical value are the easiest and most simple. The solubility in cold water with the color and transparency of the solution, and the loss by heating a weighed portion, are quite sufficient as tests in the present condition of the market. In heating a weighed portion, it is not necessary to heat it to redness as directed by the books, nor is it necessary to heat it long. And an ordinary porcelain capsule of small size, with a common alcohol lamp, are all that is necessary. If the heating be done in a Bunsen gas-burner flame, the greater or less yellowness of the flame will roughly, though practically, indicate the proportion of chloride of sodium, for, the British Pharmacopœia to the contrary notwithstanding, bicarbonate of soda free from chlorides does not give a yellow color to flame, in a practical sense, the best brands in the market hardly tinging the flame at all.

The critical assay of the proportion of carbonic acid is conveniently made by a careful use of Fresenius and Wills's twin bottles. At least these were used with facility in making the above table.

Brooklyn, July, 1871.

ON SUBCARBONATE OF IRON.

BY P. W. BEDFORD.

QUERY 20.—Does the commercial subcarbonate of iron of the market, conform to the United States Pharmacopœia? If not, in what respect does it differ?

IN answer to this query the writer examined four specimens of the subcarbonate of iron obtained from different manufacturers. Specimen No. 4, is made in strict accordance with the requirements of the U. S. Pharmacopœia, and will be noticed differs considerably in color, appearance, and apparent density.

All the samples are easily soluble in excess of hydrochloric acid with heat, No. 3 dissolving most readily, as it also does when no heat is applied, although all are soluble by prolonged treatment with acid without heat.

When ignited the loss is: No. 1, 20 per cent.; No. 2, 21 per cent.; No. 3, 24 per cent.; No. 4, 23 per cent.; which is due to water, and a small amount of carbonic acid.

When the samples were subjected to volumetric analysis they show the following composition:

	No. 1.	No. 2.	No. 3.	No. 4.
Sesquioxide of Iron, . . .	75.6	76.5	72.6	75.6
Water, ...	19.0	20.1	22.5	21.6
Insoluble residue, ...	0.1	0.1	0.1	0.3
Alkalies and other impurities,	5.3	3.3	4.8	2.7
	100.	100.	100.	100.

None of the samples contained any of the carbonate of iron. What little carbonic acid was eliminated, came from the carbonate of soda, that was not completely washed out in the preparation. It would appear that carbonate of iron, so-called, as found in regular course of business, is quite uniform in composition, and that if it is not made in strict accordance with the directions of the U. S. Pharmacopœia, yet it has the same composition and is quite as soluble. I would add that the samples examined are from the best manufacturers in New York and Philadelphia, although it is known that some varieties of this article are offered at a price below what it can possibly be made for. I have not, however, examined such samples, but will at our next meeting report further on the subject.

TARTAR EMETIC.

BY JOSEPH P. REMINGTON, PHILADELPHIA, PA.

QUERY 24.—The purity of commercial tartar emetic has been questioned. To what extent, if at all, is the article impure, and in what respect does it usually fail to conform to the officinal standard?

SOON after accepting this query, steps were taken to secure samples for examination from the principal manufacturers of the salt in the country, and small quantities from the shop bottles of dispensers were also obtained, so that the examination might fairly represent the present state of the market.

The mode of conducting the examination was that of ascertaining the amount of antimony existing in the sample examined, by precipitation as tersulphide.

This was readily accomplished by weighing out accurately a portion of tartar emetic, dissolving it in twenty parts of distilled water, and passing a stream of hydrosulphuric acid gas through it until the liquid smelt strongly, indicating an excess.

This was then heated to drive off the excess of gas, and the mixture poured on a tared and dried filter previously arranged, and after the precipitate was thoroughly washed and drained, the filter and contents were removed, and dried in an oven; when the filter by successive weighings, ceased to lose, a note of the weight was made.

This simple plan of testing was adopted, under the belief that it was the best, for no adulterated sample would be likely to indicate the exact proportion of tersulphide required by the pure salt.

The degree of solubility was used in the examination also; one gramme should completely dissolve in twenty grammes of distilled water. This test would not answer to rely upon unsupported, but it does very well to confirm the other; Mr. Hennell having found that tartar emetic containing as high as ten per cent. cream of tartar would dissolve entirely in twenty parts of water.

The conclusion arrived at, from the result of the examination is, that tartar emetic can yet be found adulterated.

Two samples out of eight fell short, both containing cream of tartar, one to the extent of eight and the other eleven per cent. Below the results will be found tabulated:

No.	1.	1	gramme	furnished	50.8	per cent.	tersulphide	of antimony.
"	2.	1	"	"	51.	"	"	"
"	3.	1	"	"	42.	"	"	"
"	4.	1	"	"	50.5	"	"	"
"	5.	1	"	"	49.5	"	"	"
"	6.	1	"	"	49.9	"	"	"
"	7.	1	"	"	39.	"	"	"
"	8.	1	"	"	51.	"	"	"

Pure tartar emetic should furnish 50.68 per cent. tersulphide of antimony. Some of the parcels examined gave more than this quantity, which was most likely caused by their losing water of crystallization by efflorescence, thus becoming stronger in tartar emetic.

No absolutely spurious samples were met with.

ON CITRATE OF MAGNESIA.

BY E. H. SARGENT.

QUERY 37.—What is the best formula for solution of citrate of magnesia? Can a permanent solution of it be made?

THE first section of this query calls for an answer which your reporter finds himself unable to give in a direct form. The *best* formula must depend largely upon the result desired. If the purpose be to obtain a pleasant aperient solution of magnesia citrate, the present officinal formula is quite satisfactory, but if a permanent preparation is desired some change is needed. The officinal formula for this preparation meets with the same objection made to many of the formulas of the Pharmacopœia,—that it is not adapted to the wants of the manufacturer and the wholesale dealers, who are expected to furnish, ready made, all the preparations needed by the smaller dealers. However deserving of condemnation this practice may be, it is the gauge by which the practical value of formulas is measured in this country.

Having no disposition to find fault with the present formula, but on the contrary asserting that it is all we require—if the intent of the same be considered—it being for a preparation that should be made by each druggist for himself and at the time it is dispensed, or at least upon the same day. Yet the fact is quite apparent that either from lack of proper qualification or from indisposition to perform the duties he has assumed, the average American druggist prefers to purchase rather than to make this and many other preparations, regardless of merit.

The trade therefore demands a permanent preparation under the well-known and popular title of citrate of magnesia. The officinal solution will not remain salable or good longer than a few days, and the result is that a solution of tartrate of soda is now generally sold under the popular label. The law of supply and demand inflexibly producing this result, and it is one that can be predicated in all similar cases, the officinal formula is ignored and base imitations are substituted. I am sorry to know that some members of this Association are guilty of this deception for the sake of profit in trade. This course is especially reprehensible, as it tends to undermine that honesty of purpose which all who prepare medicines should steadfastly maintain, and the evil is more subtle for the reason that the plea of extenuation seems a valid one to those engaged in the practice of it.

The question may then be pertinent whether a formula which is nearly unused is the *best* that can be devised for a preparation so extensively sold in all parts of the country as the one under consideration.

In view of the facts it would seem better that the formula should be adapted to the wants of the community, rather than to preserve technical accuracy in the name used to designate a popular remedy. If this conclusion be correct, it would appear desirable to devise a formula which, while retaining citrate of magnesia as a component, shall afford a solution sufficiently permanent to meet the trade want without the flavor of dishonesty and without impairing the medicinal value of the preparation.

As a partial and indirect answer to the second section of the

query, I can only give you the result of experiments made—having the before-mentioned considerations in view—in a formula for a substitute. The formula appended is constructed on the assumed basis that the presence of citrate of soda will prevent the change occurring in the solution when made as now directed. In the proportions here named, a true citrate of magnesia and a citrate of soda are formed in solution, with an excess of citric and of carbonic acid. The solution so prepared has been kept in the ordinary manner for a period of six months without any change being apparent. It agrees in taste and in its effect with that made by the officinal formula, and is deemed by your reporter more satisfactory than any other substitute he has met with. As such it is presented, rather than as a proper answer to the query assigned him. The formula:

Take of—

Citric Acid, ...	417 grains.
Carbonate of Soda (Crystal.), ...	427 "
or of Bicarbonate of Soda, ...	251 "
Dissolve in Water, ...	8 fl. oz.

Neutralize the solution with carbonate of magnesia (about 150 grains), filter and add 33 grains citric acid, one fluid ounce syrup of citric acid, water enough to fill the bottle (about 4 fluid ounces), 40 grains bicarb. potassa, and cork.

ON THE AMOUNT OF MAGNESIA AND CITRIC ACID CONTAINED IN SOME COMMERCIAL SOLUTIONS OF CITRATE OF MAGNESIA.

BY PROF. GEO. F. H. MARKOE.

QUERY 31.—What proportion of magnesia is contained in the solutions of citrate of magnesia as obtained from different sources, and how do these solutions differ from the officinal?

A GOOD working formula for solution of citrate of magnesia, that will give a permanent and agreeable preparation, is very much needed. The officinal formula yields a solution that will do very well if made up in quantities to supply the demand for

a few days; but it sooner or later becomes unfit for sale, because a large portion of the citrate of magnesium is precipitated in the form of insoluble hydrous crystals having the composition $3Mg''2\bar{C}i,7H_2O$. This form is much less soluble than the normal magnesium citrate, $3Mg''2C_4H_5O_7$, but the latter is very prone to pass into the former, and unless the solution is sufficiently dilute, a crystalline precipitate will be the result.

This deposit always takes place in a solution made by the U. S. Pharmacopœia process, and hence those who manufacture solution of citrate of magnesia for the market, must modify the formula to get a more stable preparation, or have their goods returned to them as unsalable.

A comparatively permanent solution can be made either by increasing the proportion of citric acid to form a soluble acid salt of magnesium, or, as is much more common, to reduce the quantity both of magnesia and citric acid, thus making an amount of magnesium citrate that will remain in solution in the quantity of liquid present, after it passes into the sparingly soluble hydrous salt.

In order to satisfactorily answer the query as to the character of the solutions of citrate of magnesia of the drug markets, samples were obtained from various sources, and were submitted to a careful examination. The results are herewith given:

No. 1. "Effervescing solution of citrate of magnesia. Prepared by E. H. Sargent & Co., Chicago."

This sample contained quite a thick layer of a crystalline precipitate. The bottle and contents were placed in a water-bath and heated until the deposit was dissolved. It was then examined in the following manner:

A portion of the solution was acidulated with nitric acid, and divided into two portions. To one part silver nitrate was added; this reagent did not disturb the transparency of the solution, hence it was free from chlorides.

To the other part barium nitrate was added. No precipitate formed, and therefore it contained no sulphates.

Ammonium chloride, followed by ammonia and sodium phos-

phate, was added to a portion of the original solution, and the mixture stirred briskly. A white crystalline precipitate of magnesium and ammonium phosphate ($Mg''NH_4PO_4$) was formed, proving the presence of a magnesium salt.

A saturated solution of sodium acetate* and acetic acid was added to another portion of the original solution, the mixture briskly agitated and allowed to stand for some time. No precipitate; absence of tartrates.

Calcium chloride and ammonium chloride added to some of the original solution containing a slight excess of ammonia, and heated to boiling, gave a white crystalline precipitate of calcium citrate.

From this qualitative analysis, it will be seen that the activity of this solution is due solely to magnesium citrate.

30 cubic centimetres of the solution were treated with ammonia and sodium phosphate in excess, and allowed to stand for 12 hours. The precipitate of magnesium and ammonium phosphate collected on a filter, washed with a mixture of 3 parts water and 1 part water of ammonia, dried on a water-bath, and then ignited in a platinum crucible, gently at first, and finally exposed to the blowpipe flame. The crucible and contents were allowed to cool under a bell-glass over sulphuric acid, and then weighed, giving

1.493 grms. magnesium pyrophosphate ($Mg_2P_2O_7$) =
.537 " magnesia--MgO.

30 c.c. were treated with lead acetate in excess—the precipitate collected on a tared filter, washed first with water, then with alcohol; dried on a water-bath; allowed to cool between two watch-glasses over sulphuric acid under a bell-glass and weighed, giving

6.609 grms. triplumbic citrate ($3Pb,2\overline{Ci})_4$ =
2.183 " dry citric acid. $H_3\overline{Ci}$.

No. 2. From T. J. Bluthardt, Chicago. This sample was very pleasantly flavored, slightly acid, and had a small quantity of white granular precipitate.

It was free from chlorides, sulphates, and tartrates.

* Potassium acetate most like. See last line on next page. (EDITOR.)

30 c.c. gave 1.075 grms. $Mg_2P_2O_7 = .387$ MgO.
30 c.c. " 4.641 " $3Pb_2,\bar{C}i = 1.533$ $H_3\bar{C}i$.

No. 3. From T. Whitfield & Co., Chicago. This solution was quite acid to taste, no precipitate, free from chlorides, sulphates, and tartrates.

30 c.c. gave .613 grms. $Mg_2P_2O_7 = .220$ MgO.
30 c.c. " 5.124 " $3Pb,2Ci = 1.691$ $H_3\bar{C}i$.

No. 4. From D. R. Dyche & Co., Chicago. Slightly acid; without precipitate, free from chlorides, sulphates, and tartrates.

30 c.c. gave .723 $Mg_2P_2O_7 = .260$ MgO.
30 c.c. " 3.297 $3Pb,2\bar{C}i = 1.089$ $H_3\bar{C}i$.

No. 5. From Hegeman & Co., New York. Clear, pleasantly acid solution, free from chlorides, sulphates, and tartrates.

30 c.c. gave .793 $Mg_2P_2O_7 = .285$ MgO.
30 c.c. " 4.038 $3Pb,3\bar{C}i = 1.333$ $H_3\bar{C}i$.

No. 6. From Chas. Ellis, Son & Co., Philadelphia. Clear, sharp, acid taste, free from chlorides, sulphates, and tartrates.

30 c.c. gave .826 $Mg_2P_2O_7 = .297$ MgO.
30 c.c. " 5.739 $3Pb,2\bar{C}i = 1.895$ $H_3\bar{C}i$.

No. 7. From John C. Baker & Co , Philadelphia. Very slight granular precipitate, free from chlorides, sulphates, and tartrates.

30 c.c. gave .684 $MgP_2O_7 = .246$ MgO.
30 c.c. " 3.035 $3Pb,2\bar{C}i = 1.002$ $H_3\bar{C}i$.

No. 8. From Van Schaack, Stevenson & Reid, Chicago. Very acid, free from precipitate, and from chlorides, sulphates, and tartrates.

30 c.c. gave .427 $MgP_2O_7 = .153$ MgO.
30 c.c. " 3.678 $3Pb, 2\bar{C}i = 1.214$ $H_3\bar{C}i$.

No. 9. This was labelled "Caswell, Hazard & Co. Citrate of Magnesia in solution."

This preparation differs from the officinal, in being more agreeable and more active.

This solution was perfectly clear, and free from chlorides and sulphates.

A small portion treated with potassium acetate, and acetic

acid, gave an abundant crystalline precipitate, soluble in potassium hydrate, reprecipitated by acetic acid in excess, thus proving the presence of tartaric acid.

To another portion, ammonium chloride, ammonia and sodium phosphate was added, and the mixture briskly agitated. No precipitate formed even after standing for some time. This proved the absence of magnesium compounds.

A small portion of the original solution was evaporated to dryness, then ignited in a porcelain crucible until all the organic matter was burned off.

The residue effervesced when treated with acids; had a strong alkaline reaction; a small portion held in the flame of a Bunsen burner, by means of a platinum wire, gave the characteristic intense yellow sodium flame. These reactions are sufficient to prove the presence of a sodium salt in the solution, and as the only acid found was tartaric acid, "Caswell, Hazard & Co.'s Citrate of Magnesia in solution," is nothing more nor less than a solution of *sodium tartrate*, without a trace of magnesium citrate.

In order to prove the absence of citric acid, a portion of the solution was treated with calcium chloride and boiled, the precipitate filtered off, washed with boiling water, then treated with cold solution of potassium hydrate. It dissolved perfectly; the solution by boiling gave an abundant gelatinous precipitate, which on cooling redissolved. This behavior proves it to be calcium tartrate, free from calcium citrate, which if present would not have dissolved in potassium hydrate.

No. 10. Labelled "Pure Citrate of Magnesia," prepared by Gale & Blocki, of Chicago, proved to be, like the preceding sample, a sweetened and flavored solution of sodium tartrate, perfectly free from magnesium citrate.

No. 11. Labelled "Effervescing Solution of Citrate of Magnesia," prepared by Mahla & Chappel, of Chicago, was found to be a solution of sodium citrate, quite free from magnesium salts.

Nos. 9, 10, 11, it will be seen, are labelled citrate of magnesia simply to improve their commercial value. The makers get the reputation of making a permanent and effective solution of magnesium citrate, and as a natural result their articles are

purchased in preference to the solutions of those honest manufacturers who make true magnesium citrate solutions that will sooner or later precipitate. This sort of fraud is very much in vogue at present. It is the duty of every pharmacist who has the good of pharmacy at heart to expose and discountenance such practices. There is no doubt but that solutions of sodium tartrate and sodium citrate are quite as good aperients as a solution of magnesium citrate, good enough to be sold under their true names, but to palm them off as magnesium citrate is a downright fraud, for which there is not the shadow of an excuse.

No. 12. Labelled "Solution of Citrate of Magnesium or Purgative Mineral Water," prepared by E. Burnham & Son, Chicago.

This was a clear solution having a bitter taste, recalling that of Epsom salts.

A portion acidulated with H,NO_3 and treated with $AgNO_3$ gave a slight precipitate, showing the presence of a small amount of chlorides.

A portion acidulated with HCl and $BaCl_2$ added gave a heavy white precipitate of barium sulphate, $BaSO_4$, proving the presence of sulphates.

A portion of the original solution was treated with ammonium chloride, ammonia, and sodium phosphate, the mixture briskly agitated and allowed to stand; a crystalline precipitate of magnesium and ammonium phosphate formed.

A portion of the original solution was freed from sulphuric acid and then tested for tartaric acid with negative results, but citric acid was found.

30 c.c. of the original solution were assayed, and the magnesium estimated as pyrophosphate, giving .435 gramme $Mg_2P_2O_7$ = .156 gramme MgO.

30 c.c. were acidulated with HCl, and treated with $BaCl_2$, in excess, the precipitate thrown on a filter, washed with boiling water, dried, and ignited, giving .833 gramme $BaSO_4$ = .286 H_2SO_4, which would be equivalent to .429 gramme of dry magnesium sulphate ($MgSO_4$), the slight excess of MgO over the amount necessary to saturate the sulphuric acid, only .013,

being combined with citric acid, thus giving just enough magnesium citrate to "swear by," but its activity is due to Epsom salts.

The writer is indebted to Prof. Albert E. Ebert for the samples from Chicago, and to Prof. John M. Maisch for some useful hints on the estimation of citric acid.

The writer has devoted much time to the examination of the above-named samples, having made more than fifty assays for estimating the amount of magnesia and citric acid they contained, and the results given are in every case the mean of not less than two assays. From some experiments made by the writer, he is inclined to recommend the formula given by Mr. R. Rother, in "The Chicago Pharmacist," for January, 1870, also published in "The American Journal of Pharmacy," March, 1870, p. 171, in which magnesium and sodium citrate, $Mg''Na C_6H_5O_7$, is proposed as a substitute for the normal citrate, $3Mg'', 2C_6H_5O_7$; the advantage gained being a permanent solution of the same therapeutic activity with the present officinal pharmaceutically worthless preparation.

The Boston market is supplied by C. Ellis, Son & Co., Hegeman & Co., J. C. Baker & Co., and Caswell, Hazard & Co. None of the Boston pharmacists make it for the market; a few follow the U. S. Pharmacopœia, but only make enough to supply the demand for a few days, selling it before it begins to precipitate.

Name of Manufacturers.	Quantity Assayed.	Amount of Magnesia. Gramme.	Amount of Citric Acid. Grammes.	Amount of Sulphuric Acid. Gramme.
U. S. P., calculated, . .	30 c. c.	.648	2.027	. . .
E. H. Sargent & Co., . .	"	.537	2.183	. . .
T. J. Bluthardt, ...	"	.387	1.533	. . .
T. Whitfield & Co., . .	"	.220	1.691	. . .
D. R. Dyche & Co., . .	"	.260	1.089	. . .
Hegeman & Co., . . .	"	.285	1.333	. . .
C. Ellis, Son & Co., . .	"	.297	1.895	. . .
John C. Baker & Co., . .	"	.246	1.002	. . .
Van Schanck, Stevenson & Reid,	"	.153	1.214	. . .
E. Burnham & Son, . .	"	.153	Small portion, not estimated.	.286

Caswell, Hazard & Co. = Tartrate of Sodium.
Gale & Blocki = " "
Mahla & Chappel = Citrate of "

BOSTON, August, 1871.

GLYCERIN AS IT EXISTS IN COMMERCE.

BY JOSEPH P. REMINGTON, PHILADELPHIA, PA.

QUERY 9.—Glycerin of various grades is furnished by manufacturers. In what respects do they differ? What are the usual impurities of glycerin, and what are the best practical tests?

IT cannot be said truthfully, by any one, that glycerin cannot be obtained in the ordinary market of good quality at the present time.

The extraordinary demand for the article since its first successful introduction to notice, has stimulated manufacturers to produce not only a cheap glycerin, but also one that would satisfy the critical judgment of a profession, who were eager to welcome an article of unquestionable purity, and who were not slow to appreciate it when it arrived.

Competition has sharpened the wits of manufacturers, and so many improvements in apparatus and manipulation have been made, that if a sample of the first glycerin manufactured in this country, such as is in possession of Prof. Procter, were to be put alongside of the best now in use, it would be difficult to recognize the first as glycerin.

There was a time when we had to look to a foreign market for a pure article, and for fine uses Price's glycerin was indispensable, but it was not long before Henry Bower produced glycerin which was pronounced equal to Price's, and it certainly now replaces it in a great degree, at a much lower price.

Of late years, there has been an earnest struggle to introduce foreign glycerins (principally German), and through industrious advertising, Sarg's, De Haen's, Merck's, Schering's, and other brands have become well known.

One reason why the German glycerins find a ready sale is, that they are put up in very attractive bottles; the glass is very white and transparent, and they do not look as if they had ever been near a mould, being free from the unsightly ridges so often seen on our glassware.

The effect is to give the glycerin a brilliant appearance, and it naturally sells. It would cost too much in America to make

such a bottle; indeed, a manufacturer informed the writer that they could not be made profitably here at all.

The German glycerins do not compare well with those of American manufacture, seven samples having been subjected to a fair examination, and compared with domestic brands.

One great trouble with the foreign makes is that they do not improve on acquaintance. A fine, brilliant-looking glycerin, with a handsome red label, and in an attractive bottle, may be purchased; you place it on your show-case in the best possible light (after having opened it, and satisfied yourself of its quality); customers admire it, you are charmed with it, *for about two or three weeks*. At the expiration of that time, it has acquired a disagreeable odor, which will often increase, especially if kept in a warm place, and you are finally obliged to degrade it, and cause it to take a back shelf.

A wholesale druggist in Philadelphia told the writer that he had to return a whole case of German glycerin to the seller on account of this very bad habit.

A careful perusal of the following table, showing an examination of twenty-two samples, procured from different parts of the country, will probably give the best idea of how they stand.

Samples 9 and 10 must not be compared with the others on the same footing; they were glycerins prepared for perfumers' use, and not intended to be pure; they were put in with the best brands to show them off to better advantage, like the potato among the peaches, on one account, and because it might be useful to know how far perfumers' glycerin fell short, and the principal impurities it contains.

The glycerins which stand highest are Bower's, Price's, Gordon's (Pure Inodorous, recent make), and Hartmann, Laist & Co.'s, and between these there is hardly a choice; they might all be regarded as pure glycerins. As the quality of each is unexceptionable, the price can come in properly to decide.

Sarg's best comes next, and if it were not for the empyreumatic odor developed when the glycerin is kept or warmed, this glycerin could be classed with the best. It is the best of the German glycerins.

Comparative Examination.	Specific gravity.	Color.	Odor.	Odor when heated.	Nitrate of Silver.	Sulphuric Acid.	Oxalate of Ammonia.	Ferro-cyanide Potassium.	Hydrosulphate Ammonium.	Chloride Barium.	For Ethyl-butyrate.	For Glucose
1. Sample from Boston, J. R. Nichols & Co.,	1.254	None.	Slight odor.	Quite fatty.	White flocculent precip.	Slightly discolored	Slightly clouded.	No change.	No change	No precipitate.	Slight odor.	Free from glucose.
2. Price's English,	1.252	"	None.	None.	No precipitate.	Slightly discolored	No precipitate.	"	"	No precipitate.	Very slight odor.	"
3. Hartman, Laist & Co.,	1.255	"	"	"	No precipitate.	Slightly discolored	No precipitate.	"	"	No precipitate.	Slight odor.	"
4. Bower's (Commercial),	1.252	Slightly yellow.	"	Slightly fatty	No precipitate.	Slightly discolored	Slightly clouded.	"	"	Slightly opalescent.	Slight odor.	"
5. Sample from Germany, Hamburg,	1.233	None.	Quite fatty.	Fatty and empyreumatic.	Heavy white precipitate.	Discolored.	Slightly clouded.	"	"	No precipitate.	Slight odor.	"
6. " " P. Wagner, New York,	1.250	Slightly yellow.	"	Fatty.	Slight white precipitate.	"	Very slight clouded.	"	"	No precipitate.	Marked odor.	"
7. Vienna Glycerin,	1.254	None.	"	"	Slight white precipitate.	"	Slightly clouded.	"	"	Opalescent.	Marked odor.	"
8. Sample from Stein, Hirst & Co., Chicago,	1.241	Slightly yellow.	"	Fatty and empyreumatic.	Slight white precipitate.	"	Slightly clouded.	"	"	Opalescent.	Marked odor.	"
9. Perfumers' Glycerin, S., H. & Co.,	1.220	Very yellow.	Very disagreeable.	Very disagreeable.	Heavy white precipitate.	"	Heavy precipitate.	"	"	No precipitate.	Slight odor.	"
10. " " " "	1.220	Brownish yellow.	Very disagreeable.	Very disagreeable.	Heavy curdy white precip.	Very much discolored	Precipitate.	"	Black precipitate.	No precipitate.	Very marked odor.	"
11. Sample from Berghausen & Co., Cinn.,	1.233	Slightly yellow.	None.	Very slight.	Heavy white precipitate.	Slightly discolored	Slight precipitate.	"	No change.	Very opalescent.	Slight odor.	"
12. Hartman, Laist & Co.,	1.255	None.	"	None.	No precipitate.	Slightly discolored	No precipitate.	"	"	No precipitate.	Very slight odor.	"
13. " " "	1.255	"	"	"	No precipitate.	Slightly discolored	No precipitate.	"	"	No precipitate.	Very slight odor.	"
14. Merck's, Cincinnati,	1.252	Slightly colored.	Slightly fatty	Fatty and empyreumatic.	Heavy white precipitate, turning to red.	Slightly discolored	Precipitate.	"	"	White precipitate.	Marked odor.	"
15. Gordon's "recent make,"	1.253	None.	None.	None.	No precipitate.	Slightly discolored	No precipitate.	"	"	No precipitate.	Slight odor.	"
16. " " " No. 2,	1.249	"	"	"	No precipitate.	Slightly discolored	No precipitate.	"	"	No precipitate.	Slight odor.	"
17. Schering's best C. P.,	1.254	"	Slightly fatty	Fatty and empyreumatic.	Heavy white precipitate.	Slightly discolored	No precipitate.	"	"	White precipitate.	Marked odor.	"
18. Bower's Pure,	1.253	"	None.	None.	No precipitate.	Slightly discolored	No precipitate.	"	"	No precipitate.	Slight odor.	"
19. " Concentrated,	1.250	Slightly yellow.	Slight.	Slightly fatty	Rose coloration.	Discolored.	No precipitate.	"	"	Slight precipitate.	"	"
20. Sarg's Vienna C. P.,	1.254	None.	Slightly empyreumatic.	Empyreumatic.	No precipitate.	"	No precipitate.	"	"	No precipitate.	"	"
21. " " 2d quality,	1.250	Colored.	Slightly fatty	Glue-like.	White precipitate.	"	Precipitate.	"	"	Opalescent.	"	"
22. De Haen's C. P.,	1.245	None.	Slight.	Slight.	Rose coloration.	"	No precipitate.	"	Slight precipitate.	No precipitate.	"	"

Schering's does not stand the nitrate of silver test well, and it cannot be said to be inodorous, otherwise it is a good glycerin.

De Haen's is deficient in specific gravity, and does not stand the nitrate of silver test or odor test well.

Of the cheap glycerins, Bower's Concentrated, Sarg's second quality, and Gordon's Pure Concentrated (recent make), are the best. The first and last are the best; the odor, lime salts, sulphuric acid, white precipitate with nitrate of silver, give Sarg's second quality the lower place. It is difficult to decide between Bower's Concentrated and Gordon's Pure Concentrated (recent make). Bower's has a little advantage in specific gravity, but they are both excellent for the price.

It may be noticed that Gordon's has the note appended, *recent make;* for an explanation of this, the reader is referred to page 300, vol. i, No. 7, 4th series, American Journal of Pharmacy; it will be merely necessary to say here, that the writer obtained a sample of Gordon's glycerin that had been probably made several years ago, and reported on it to the Association at the last session in Baltimore; as improvements in the manufacture have been made lately, it was but fair to examine his recent production.

The best *practical* tests for glycerin are, in the writer's opinion: 1st. Its odor when cold, and when heated, and diluted. 2d. Its specific gravity. 3d. Its deportment when treated with a solution of nitrate of silver.

A glycerin which has a specific gravity of 1.25, does not smell fatty or empyreumatic when heated, and is not disturbed by the action of nitrate of silver, can generally be rated as a first-class glycerin; these three simple tests, detecting the impurities that are most apt to occur (as a glance at the table will show), are then to be regarded as the most important.

With regard to the irritating qualities of some glycerins, a simple fact was noticed which may explain this quality (at least in a degree). One part pure glycerin, sp. gr. 1.254, temp. 77° F., was mixed with one part water, at temp. 77° F. The immediate effect produced was a rise in temperature of 10° F. One part of same glycerin at 77°, with one-fourth part water at 77°, rose 7° in temperature. Now, when concentrated glycerin is

applied undiluted to a chapped or ulcerated surface, the effect produced is a burning sensation, which, to some persons, is very unpleasant, and indeed unbearable. The glycerin has a strong affinity for moisture; it takes it from the skin, and this gives rise to a sense of burning.

If a small quantity of water is added to the glycerin before it is applied, this property of heating the skin is very much mitigated, and it might be said prevented.

A very simple practical test is to taste the glycerin, but in doing this, the fact mentioned above must be considered, and the glycerin slightly diluted.

Pure glycerin was swallowed undiluted, and immediately there was a feeling of warmth and irritation in the fauces; when diluted with one-fourth water, the effect was not noticed; whereas a glycerin which gave a flocculent precipitate with nitrate of silver (different from chloride silver precipitate, showing the presence of formic or other irritant organic acids), left an irritation in the fauces, even when diluted.

NOTE ON CHLORAL.

BY EDWARD R. SQUIBB, M.D.

Chloral supplies another forcible illustration of the baneful effects of speculation and inflation, and of the dangers which must always attend popularity; and, particularly the popularity of potent medicinal agents. It seems hard to teach the public that nothing can be potent only for good. That to be potent for good involves, in the very nature of all things, an equal potency for harm. Hence the danger of advertising any medical substances which have any potency, for popular use. The multitude of mere placebos, and catch-penny quackeries, which serve at the same time to make money, and give mental occupation and relief to trifling or imaginary ills, may be puffed and inflated for popular use with comparative safety. But when this same process is applied to a potent agent like chloral, the chances are always greatly in favor of the substance doing more

harm than good, until a panic and a prejudice are produced against it, when it may be unjustly condemned and lost.

The definite results from the careful and proper use of chloral, and its great importance in filling a place in therapeutics hitherto vacant, fortunately secure it against being lost by this reaction; and it is perhaps well, therefore, that by the sacrifice of a few lives at the outset of its career, many lives may be saved, and its use be restricted to the hands of physicians. Pharmacists cannot be too careful how they advise or dispense such agents for popular use, and they will undoubtedly be, sooner or later, held responsible for all the misuse to which their commodities may be applied.

The experience and education obtained in the making of some fifteen hundred pounds of chloral within the past year, have served to improve the writer's knowledge of this important substance, and may justify him in offering some remarks upon its characteristics and tests.

Since it has become easier to make the hydrate than the alcoholate of chloral, the latter and all mixtures of it have practically disappeared from the market without any probability of their ever reappearing. This renders the tests for alcohol and alcoholates unnecessary.

When the water of hydration is in excess, or when solid compounds of hydrate of chloral and water are put up, the substance is deliquescent, or even melts in warm weather, and a very slight excess of water manifests itself very soon by some degree of deliquescence. Whether in cake or crystal it is now very generally put up slightly deficient in water of hydration; that is, the chloral is not fully saturated to the condition of a full hydrate, and under proper control this is the best practice yet arrived at by the writer. If it could be exactly saturated, that of course would be best, but as this seems not easily practicable, it is best to have the water a little short of full hydration. If more than a shade short, however, the hydrate is proportionally pungent, because anhydrous chloral is much more pungent than the hydrate. Another disadvantage of the presence of free or anhydrous chloral is that it renders the hydrate which contains

it more liable to become slightly acid. These circumstances, and the fact that under varying conditions, chloroform dissolves more or less water, and watery solutions dissolve more or less chloroform, together render the chloroform test fallacious and comparatively useless as ordinarily applied. That is, the yield of chloroform may be always the same if the decomposition be complete, but it cannot be weighed or measured with sufficient accuracy.

Chloral has now been made in such quantities, and with so much competition, and it is so comparatively easy to make it of fair quality, that the mistakes and imperfections arising from ignorance are now no longer made, and the general quality has got far beyond the reach of the earlier tests. More sensitive and more delicate tests are now needed—not to decide whether a given substance is hydrate of chloral, but to decide between different specimens of hydrate of chloral which come into the markets, even from the same manufacturer—as to which contains the least or the most of other and mere accidental products of the action of chlorine on alcohol. In all the better brands these accidental products are in very small proportion, and not easy of detection. Just as in the instance of chloroform they are neither made, nor left in it purposely or carelessly, and the defect lies simply in the insufficiency of the means and the labor necessary to take the last portions out. Within practical limits they may all be taken out by any of the processes in use for the purpose, provided these be used with sufficient skill, pains, and labor; and the want of uniformity of the best brands now in the market, is chiefly due to want of care and labor. That is, profit being the chief object, this is increased by dodging its greatest enemy, namely, skilful labor.

After a large number of examinations, the writer comes to the conclusion that at present there is no single test which will indicate the quality of chloral, and that the value of any group of tests depends almost entirely upon the skill and care with which they are applied. The sensible properties are very characteristic to those who are expert and familiar with the substance, and by a little education and practice any one may soon attain a pretty critical judgment.

The writer still greatly prefers the granular crystalline form to any other, as conducive to greater purity, and the most simple and critical mode of examination known to the writer, and which has not been hitherto published, is by means of chloroform. Chloral and its hydrate are both freely soluble in chloroform, and from this solution, when dropped on bibulous paper, or evaporated from a watch-glass, the chloroform flies off first, the anhydrous chloral next, and the hydrate last and more slowly. The impurities are still less volatile, and may be detected in the later stages of the evaporation by their different odor. The hydrate of chloral, after the last traces of anhydrous chloral have passed off, is comparatively inodorous, and what odor it has is very mild, sweet, and clean, so that any contamination of this mildness and sweetness is the more easily recognized. The chloroform used must of course be itself free from much impurity, and should not color sulphuric acid. The solution of chloral in chloroform, when tested with sulphuric acid, just as chloroform is tested, should give no color to the acid. The acid should be poured slowly into the chloroform solution, when the slightest change of color can be seen at the line of separation between the two liquids before they are shaken together. Indeed, after shaking, the colored stratum becomes so diluted by the excess of acid, that the tint may be hardly recognizable. So delicate is this test that when carefully and properly managed, no specimen of chloral has ever been seen, except when taken directly from the purifying flasks, that would not give *some* color at the line of separation between the liquids. That is, the atmospheric dust which is unavoidable in the handling and putting up of the chloral, is sufficient to give a tinge at the line of separation. As in the case of chloroform alone, the color, however much or little increases by standing, and is only fully developed after twenty-four hours. In this testing the chloroform alone should be tested, side by side with the chloroformic solution of chloral, and only the difference be taken into account. Of course, colorless concentrated sulphuric acid should be used, and a chemically clean glass-stoppered bottle, as in the testing of chloroform.

The next important step in the examination, not hitherto published, is the freezing-point, or the temperature at which the chloral begins to crystallize when melted. This point appears to be very definite, and is very easily ascertained. An ounce bottle of chloral, as purchased, should have the glass stopper loosened but not removed (it should never be sold in any other than glass-stoppered bottles), and the bottle should be then immersed to the shoulder, in warm, not hot, water, and occasionally shaken until the chloral is melted. The liquid chloral should of course be colorless, transparent, and free from specks of foreign matter to a practical degree. The bottle should then be taken from the warm bath, the stopper removed, and while held by the neck, the bulb of a small chemical thermometer should be placed in the liquid and used continuously as a stirrer until the liquid becomes opalescent, or loses its bright transparency. At this moment the temperature should be taken and noted. The bottle is then again placed in the warm water, and the contents stirred until again transparent; then again removed from the bath and again stirred to the crystallizing-point, and the temperature again noted for verification of the first trial. This does not waste nor injure the chloral at all, and the thermometer when removed should be immersed in distilled water in a small test-tube, to dissolve off the adherent chloral. The solution thus obtained if tested with pale blue litmus-paper, will commonly indicate slight acidity, and with solution of nitrate of silver will give slightly more cloudiness than the water alone will give. The writer has never tested a specimen of chloral which had been six months made, which did not give evidence of slight hydrochloric acid acidity, if the testing was delicate. Hence it is not amiss, though perhaps not important, to add a drop or two of ammonia to all solutions of chloral when dispensed for use, as originally advised by Liebreich, since it may serve to arrest a commencing decomposition which might soon become rapid in the solution, particularly when the solution is to be kept many days, or when it has organic matter of any kind in it.

To return to the freezing-point. Specimens of chloral from

the best makers may be found in the market, which begin to crystallize at from 45° C. = 113° F., up to 52° C. = 125.6° F. The best specimens, however, crystallize between 48° C. = 118.4° F., and 51° C. = 123.8° F. Those which crystallize at the higher temperatures contain the most anhydrous chloral, and those which crystallize at the lower temperatures contain an excess of water. Accurately hydrated chloral crystallizes at about 48° to 49° C. = 118.4° to 120.2° F., and the best practically adjusted specimens crystallize within one-half a degree of 50° C. = 122° F. Specimens which crystallize below 48° C. =118.4° F. do not stand summer temperatures without becoming moist, whilst those which crystallize below 47° C. = 116.6° F., are proportionately deliquescent. This tendency to deliquesce is, however, mainly due to the interstitial mother liquid, and this liquid it is which absorbs the moisture of the atmosphere, and thus finally dissolves the crystals in warm weather. Hence as large crystals can only be obtained by comparative slow crystallization from more dilute solutions, they contain the most watery liquid in the interstices, and therefore, soonest deliquesce. A basin of large crystals, looking somewhat like bromide of potassium, in regard to the size of crystal, stood upon the writer's table covered loosely with paper, from March until September. Up to the 1st of June they remained quite dry, and could be powdered as easily as bromide of potassium. They then began to grow moist, slowly at first, but very rapidly during the latter part of July, and now in September there is a confused mass of crystals at the bottom of the capsule, covered by an inch or more of transparent syrupy liquid.

A few pounds of these same crystals standing in the same place, in an imperfectly stoppered, wide-mouth bottle, and this frequently opened, have kept much better, and are in fair condition, though moist. Small granular crystals which form from the melted chloral when carefully underhydrated, seem to be by far the best form for convenient practical use.

All the writer's experiments, and they have been numerous, of crystallizing from bisulphide of carbon, from ether, from chloroform, and from oil of turpentine, have failed in practicability.

Another important test of quality for commercial chloral is its boiling-point. This was early recognized as a test, because no two liquids are known which boil at precisely the same temperature, while all mixtures are known to have a moving boiling-point, that is, do not boil continuously at any fixed temperature. Writers, however, have given a very different value and significance to this test, some regarding it as no test at all, while others have considered it infallible. This discrepancy appears to depend upon the skill or want of skill and knowledge with which the test was applied. Most liquids can be heated far above their boiling-point without boiling, but all can be made to boil at the normal boiling-point by proper management. Chloral simply heated in a clean test-tube, may or may not boil at its boiling-point. But if the test-tube be one-sixteenth filled with broken glass, and be heated in a glycerin bath, the chloral will boil at its normal boiling-point, and will continue to do so, and a chemical thermometer immersed in it, will indicate the boiling-point with accuracy.

Accurately hydrated chloral begins to give off bubbles of vapor from the hottest surfaces of the tube when the thermometer indicates about 90° C. = 194° F., but it does not properly boil throughout the liquid below 97° C. = 206.6° F., and one-half of it at least will boil off before the temperature varies much from this point. It however appears to gradually decompose from air contact, or some other cause, underhydrated chloral boiling off, and overhydrated chloral remaining, so that the boiling-point gradually rises, after boiling for some time. The best commercial specimens of chloral—that is, a little underhydrated—begin to boil throughout the liquid at about 96.5° C. = 205.7° F. The underhydrated portion, however, boils off in a few seconds, and the thermometer rises to 97° C. = 206.6° F., and finally to 97.5° or 98° C. = 207.5° or 208.4° F., by the time that half the liquid has boiled off.

Chloral should not begin to boil fairly below 95° C. = 203° F., because if it does it is too much underhydrated, and therefore too liable to decomposition; and it should boil down to one-half steadily at 97° to 98° C. = 206.6° to 208.4° F. If it boils off

above 98° C. = 208.4° F., the indication is that it is overhydrated and deliquescent.

The natural accidental impurities which are left in the chloral are, in all the better grades, in so small a proportion as to escape detection by any ordinary application of the boiling-point test.

In conclusion, it may be remarked that while several of the grades of chloral now to be found in the market are worthy of confidence, they are by no means uniform, but are improving in this respect; and there is no reason to fear that good chloral will ever again be accessible at a moderate price. The enormous scale upon which it has been made in Germany, and the difficulty of reducing this scale to meet the reaction which fatal cases of poisoning in popular use has caused, have overstocked and very much depressed the market; and it is to be feared that some of this overstock may become decomposed before it can be consumed. The quality should therefore be closely watched, and as soon as a parcel is found to be strongly acid it should be rejected. The test of acidity by means of a glass rod wet with solution of ammonia held near the mouth of the bottle, though useful, is not entirely trustworthy, and is hypercritical, since the vapor of anhydrous chloral, whether of itself or by slight decomposition from air contact, produces a cloud with ammonia.

Brooklyn, September, 1871.

ON SULPHOPHENIC ACID.

BY A. B. PRESCOTT, M.D.

The limited observations and results which are submitted to the Association in this note, relate to a few points in the preparation, character, and composition of sulphophenic acid and its salts; and, in connection with the report, the interest of the subject has tempted the writer to notice some features of its literature.

The formation of sulphophenic acid is sufficiently simple, being the inevitable result of bringing pure sulphuric and phenic acids

in contact; but we have yet to study the most advantageous proportions and conditions for the combination. If the mixture of acids be diluted beyond a certain point, no combination takes place; and when the concentrated acids act upon each other, some portion of each acid remains uncombined under all conditions. Dr. Hager has stated, that however long digestion be continued at 125° F., at least ten per cent. of the sulphuric acid refuses to combine; and he recommends the addition of 120 parts of concentrated sulphuric acid to 100 parts of phenol.

By employment of higher temperatures, I find that the residue of sulphuric acid may be reduced to about five per cent. of that taken. Fifty grammes of sulphuric acid (chem. pure, sp. gr. 1.843), were added to fifty grammes of carbolic acid (Calvert's medicinal, No. 2). The mixture was held at 300° F. for half an hour, cooled gradually with the sand-bath, and then set aside in an open vessel, at about 55° F. The mixture cooled to a thick syrupy liquid, wherein the woolly tufts shortly appeared, and at the expiration of four days, its lower four-fifths consisted of a firmly coherent crystalline mass, while the supernatant liquid was more limpid than concentrated sulphuric acid. Separate determinations of the uncombined sulphuric acid in the supernatant liquid, and of that in the crystalline mass, gave the following results:

Liquid yielded	1.1710	barium sulphate	=	0.4924	grms. $HO.SO_3$.
Crystals "	5.1325	"	=	2.1584	" "
Total, ...				2.6508	" "

As the 50 grammes of concentrated sulphuric acid contained 48.5 grammes of monohydrated acid, it appears that $5\frac{4}{10}$ per cent. of the same escaped combination. Accepting the sulphophenic acid as its typical composition, $HO.C_{12}H_5O.2SO_3$ (the correctness of which I confirmed in the same sample), it follows that 43.979 grammes of absolute phenic acid entered into union; leaving 6.011 grammes, or 12 per cent. of the 50 grammes weighed, to be set down as water, impurity, and unappropriated phenol.

Although phenol is not miscible in sulphuric acid before combination, or much more soluble in dilute sulphuric acid than in

water, it is miscible in all proportions with concentrated sulphophenic acid, and in less than half its bulk of sulphophenic acid diluted with four volumes of water. The addition of much more water precipitates the phenol, which is again dissolved by the addition of a little more sulphophenic acid. Hence, uncombined phenol, however abundant, cannot be separated from sulphophenic acid by water.

The phenol which remains free is less readily removed from the product than the uncombined sulphuric acid; and if the diminution of the former could be secured by a proportionate increase of the latter, without doubt the quantity of sulphuric acid should be increased to this end. But any considerable excess of sulphuric acid prevents the crystallization of the crude sulphophenic acid; and whether it be due to non-occurrence of crystallization or not, so far as I have been able to ascertain by the odor and the intensity of qualitative tests, even large stœchiometric excesses of sulphuric acid still leave nearly the same quantity of phenol not appropriated.

The uncombined sulphuric acid is very perfectly and readily removed from the diluted mixture by carbonate of barium, added carefully until the filtrate is precipitated by neither solution of barium or by sulphuric acid; and this agent will continue to be preferred for this purpose. Oxide or carbonate of lead leaves traces of lead sulphate, and carbonate of lime more than traces of lime sulphate in aqueous solution; but as the sulphophenates are better purified by crystallization from alcoholic than from aqueous solution, and as the sulphate of lime can be filtered clean from alcohol, the very cheap carbonate of lime may be found applicable in the pharmaceutical manufacture of the salts of sulphophenic acid.

The residual phenol may be removed (1) directly from liquid crude sulphophenic acid by repeated washings with stronger ether. The washing should be continued until the ether, siphoned off, leaves a residue free from the odor of phenol, and when warmed with nitric acid and then saturated with potassa, is not more than faintly colored. The water taken up by the ether will carry traces of sulphophenic acid, responding slightly to

the latter test. The uncombined phenol is also left behind, (2) by crystallization of the sulphophenates, preferably from alcoholic solution. When free sulphophenic acid is to be prepared as a final product, its barium salt is decomposed by an equivalent quantity of sulphuric acid, or the calcium salt by oxalic acid or in alcoholic solution by sulphuric acid, or the lead salt by sulphhydric acid.

The combination of sulphuric acid with phenol, at any temperature, develops the wine tint which is seen, to a greater or less extent, in sulphophenates; the color being somewhat deeper if a high temperature have been employed. The application of 300° F. for one-half hour occasions a bright wine color to be transmitted through a layer three inches deep; and the temperature may be kept for some minutes at the boiling-point of phenol (369° F.), with a scarcely perceptible deepening of the tint. This color is (mainly if not wholly) due to a substance removable from liquid sulphophenic acid by ether washing. In the first washing, the supernatant ether shows a tint of the same depth as the washed acid below; but in subsequent washings the ether colors itself rather less deeply than the tint of the aqueous layer; and I am scarcely able to say that it is practicable to remove every trace of color by this means. The evaporation of the decanted ether leaves behind the color substance: a thick, oily liquid of intense blood-red color, very little odor, fiery taste, strong capillary attraction, coloring paper without the production of a transparent spot, soluble in alcohol, but insoluble in water, very slight acid reaction (probably due to contamination). Heated with soda-lime, it does not generate ammonia; its color is not changed by chloride of lime, or by heating with corrosive chloride of mercury. The color removed by ether from carbolic acid which has grown brown in the light is an altogether different substance. I have not succeeded in removing more than traces of color from crystallized sulphophenates by ether.

Sulphophenates are prepared (1) from crude sulphophenic acid by its direct union with bases or their carbonates; (2) in the same manner from the acid purified only by removal of

sulphuric acid, or purified by removal of both sulphuric acid and phenol (ether washing); (3) from crystallized sulpho-phenates of barium or calcium, or lead, by double decomposition with sulphates or carbonates (calcium) of the bases desired; (4) sulphophenate of zinc by decomposition of the lead salt with metallic zinc; (5) from sulphophenic acid, first set free from its crystallized salt, and then combined with the bases or their carbonates. By careful and repeated crystallizations, a pure product may be obtained even by the first method, but it is certainly preferable to remove the free sulphuric acid as in the second. For administration, the close removal of the phenol is imperative, as sulphocarbolates are given in doses relatively large.

Sulphophenic acid is soluble in alcohol; insoluble in ether and chloroform. Its salts are sparingly soluble in cold, freely soluble in hot alcohol, insoluble in ether. Pure sulphophenic acid, in aqueous solution of two to five per cent., promptly coagulates albumen, as likewise do the sulphophenates with acetic acid; but the neutral sulphophenates of alkalies and alkaline earths do not coagulate albumen. To ascertain antiseptic powers, a comparative trial was made by immersing and setting aside pieces of fresh lean meat in the following liquids:

(*a*) Distilled water.
(*b*) One per cent. solution of sulphophenate of sodium.
(*c*) Five per cent. " " "
(*d*) Five per cent. solution of purified sulphophenic acid.
(*e*) One per cent. solution of sulphuric acid.
(*f*) One per cent. solution of phenol.

At the expiration of twenty-four hours, a slight odor of incipient animal decomposition was observable from (*a*), (*b*), and (*c*).

At the end of thirty-six hours, (*b*), (*c*), and (*a*) evolved offensive odors, that of (*b*) being decidedly most offensive, while (*a*) was somewhat less offensive than (*c*). At this time some sulphate occurred in (*c*), as evinced by barium precipitate, none being found in (*a*). Solution (*b*) was now thrown out.

After forty-six hours the putrefaction in (*c*) had advanced little farther than at the previous observation, and was less offensive than that of (*a*), while the filtrate of (*c*) gave a heavier precipi-

tate of barium sulphate than before. A very slight barium precipitate was now obtained from (*d*).

After sixty hours the putrefaction in (*c*) had extended but slightly beyond that previously noted, while the solution gave a still somewhat increased barium precipitate. The barium precipitate from (*d*) was still very slight. Not the slightest fetor was discoverable in (*d*), (*e*), or (I need hardly state) in (*f*). A five per cent. solution of sulphophenic acid which had stood open during this time, in the same room, gave no precipitate with chloride of barium. No odor of phenol was detected in (*c*).

It would seem from these observations that sulphophenic acid has a coagulating power and antiseptic effect sufficient, in tolerably concentrated solutions, to preserve animal substance, and that the contact of the coagulated substance effects a very slight separation of sulphuric acid. Also, that sulphophenates do not at all delay the inception of animal decomposition, but do, in some degree, retard the progress of such decomposition, in consequence of which the sulphophenate suffers decomposition (into sulphate, sulphuric acid, and phenol), while no perceptible odor of phenol is evolved.

Neither sulphophenic acid nor its salts suffer decomposition in aqueous solution in the air, and neither suffer more than slight decompositions by long boiling in dilute solutions.

The most delicate test for sulphophenic acid is that likewise the most delicate for phenol,—the production of picric acid and its salts. Strong nitric acid is added and heat applied to form tri-nitrophenic acid instead of the mono- or di-nitrophenic acid, liable to remain if heat be not used. According to Carey Lea, water containing $\frac{1}{100000}$ of tri-nitrophenic acid is distinctly yellow, and when only $\frac{1}{300000}$, the tint is perceptible in a stratum one inch deep. The delicacy of the test is much increased by adding sufficient potassa to neutralize both the picric and undecomposed nitric acids. I find that one part of sulphophenate in 50,000 parts of water, boiled with nitric acid and saturated with potassa, appears distinctly yellow in a stratum one inch deep, and that one part of phenol in 100,000 parts of water, treated in the same manner, produces an equal depth of tint. The tri-nitro-

phenate of potassa, requiring 260 parts of cold water for solution, is easily crystallized in its beautiful slender yellow needles.

The *composition* of sulphophenic acid authorizes its classification with the sulphovinic acids, and the brotherhood of their derivatives indicates close relationship between phenol and the alcohols. The exceeding interest of these chemical analogies is enhanced by the fact that both sulphophenates and sulphethylates are at the present time on trial as therapeutic agents, and that both are believed to suffer similar and gradual decompositions in the animal body—the former furnishing phenol as a medicinal agent, and the latter yielding sulphate as the active agent. Phenol has the composition of a monatomic alcohol; it is neutral to test-papers, and its combinations with bases are scarcely stable enough to be classed as salts.

Sulphethylic acid is much less stable than sulphophenic acid; the former in dilute solutions decomposes gradually in the air and more rapidly on boiling, while the latter may be concentrated on the water-bath or even boiled without injury. The former decomposes at its own boiling-point, evolving oxide of ethyl; the latter decomposes at the boiling-point of phenyl hydrate, which distils, for some time, intact. An attempt to produce phenic ether by distillation from sulphophenic acid serves to show that, if possible, it must succeed by the introduction of peculiar conditions. When the boiling-point rises above that of phenol, that substance has mostly passed over, and sulphurous acid and quite indeterminate oxidized products appear. The double oxides of phenyl and methyl, phenyl and ethyl, phenyl and amyl, &c., are well known, but may perhaps as well be considered phenates as conjugated ethers, certainly simple phenic ether has not been obtained from them. Scrugam inferred the production of oxide of phenyl in the reaction between chloride of phenyl and phenate of sodium, heated, but distillation failed to furnish the supposed product. Finally, Hoffmeister (Deut. Chem. Ges. Ber., iii, 747, and Jour. Chem. Soc., Apr., 1871) has declared the production of oxide of phenyl by distilling phenol with sulphate of azophenylamine.*

* $HC_6H_5N_2SO_4 + HC_6H_5O = (C_6H_5)_2O + H_2SO_4 + N_2$.

The purified phenic ether is a colorless solid, melting at 82° F., and boiling at 478° F. (or 109° above the boiling-point of phenol). The difficulty of phenic etherification seems to be explained in the fact that the ether has a higher boiling-point than its alcohol. The new product is described as very stable, having an agreeable aromatic odor, and its therapeutical properties will be looked for with interest.

Should it be found that sulphophenates are producible with other than the typical formula, $MO.C_{12}H_5O.2SO_3$ (or $MC_6H_5SO_4$), the fact will scarcely present a dissimilitude with the sulphethylates. For we have ethionic acid, $C_4H_6O_2.4SO_3$ (in the salts of which two molecules of base are substituted for two of water), and isomers of sulphethylic acid are described.

An ánalysis of selected crystals of sulphophenate of barium, dried in fine powder at 212° F., until it ceased to lose weight, gave the following results for 1000 grammes:

BaO . .	0.3165 found . .	0 3167 calculated from	$BaO.C_{12}H_5O.2SO_3$
SO_3 . .	0.3224 " . .	0.3312 " " "	"

The baryta was precipitated with dilute sulphuric acid. For the determination of the sulphuric anhydride, the salt was decomposed with strong nitric acid on the water-bath, in the presence of an excess of nitrate of barium; most of the nitric acid evaporated, and the remainder nearly neutralized with potassa, and the precipitate washed first by decantation and then on a filter in the usual manner. It is difficult to decompose by nitric acid without loss of sulphuric acid, unless in the presence of excess of barium salt.

It is stated (Rabantan, Schmidt's Jahrbücher, 148, 610) that sulphethylate of sodium, when administered, very gradually splits into sulphate of sodium and alcohol in the alimentary canal, and the dose of the sulphethylate may be 380 grains—not higher than the dose of sulphate.

Dr. Sansom (Practitioner, 1869, July) states that after the administration of sulphophenates, an increased quantity of sulphates appears in the urine, while the breath bears the odor of phenol. He gives doses as large as one drachm, which, if fully decomposed in the body, would yield over twenty grains of

phenol, or many times the dose of this agent. Thus the therapeutical potency of these agents shows that sulphophenates are less easily decomposed than sulphethylates, in the animal body as well as in the laboratory.

UNIVERSITY OF MICHIGAN, September, 1871.

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Journal de Pharmacie et de Chimie, Paris.
Répertoire de Pharmacie, Paris.
Schweizer Apotheker-Verein, Mr. R. Lindt, President, Bern.
Oesterreichischer Apotheker-Verein, Wien.
Oesterreichische Zeitschrift für Pharmacie, Wien.
K. K. Gesellschaft der Aerzte, Dr. Hauke, Secretary, Wien.
K. K. Akademie der Wissenchaften, Wien.
K. Bayer, " " München.
Neues Repertorium für Pharmacie, Prof. Buchner, München.
Vierteljahresschrift " " Prof. Wittstein, München.
Norddeutscher Apotheker-Verein, W. Danckwortt, Magdeburg.
Neues Jahrbuch für Pharmacie, Dr. Vorwerk, Speyer.
Archiv der Pharmacie, Prof. Dr. H. Ludwig, Jena.
Chemisches Centralblatt, Dr. Rud. Arendt, Leipzig.
Jahresbericht über die Fortschritte der Chemie, &c., J. Ricker'sche Buchhandlung, Giessen.

Jahresbericht für Pharmacognosie, Pharmacie und Toxicologie, Prof. Dr. Wiggers, Göttingen.
Annalen der Chemie und Pharmacie, Prof. Dr. Wöhler, Göttingen.
K. Akademie der Wissenschaften, Göttingen.
" " Berlin.
Pharmaceutische Central-Halle, Dr. H. Hager, Berlin.
Pharmaceutische Zeitung, Bunzlau.
Pharmaceutische Gesellschaft in St. Petersburg, Dr. A. Casselmann, St. Petersburg.
Pharmaceutische Zeitschrift für Russland, St. Petersburg.
Pharmaceutisches Institut, Wilna, Russia.
Pharmaceutical Institution, Stockholm, Sweden.
Kongelige Norske Universitet i Christiania.

LIST OF PUBLICATIONS RECEIVED,

For the American Pharmaceutical Association.

Societies and editors are respectfully requested to forward all publications intended for the American Pharmaceutical Association to the Permanent Secretary. European exchanges, if not sent by mail, will reach us through the Smithsonian Institution at Washington, or through Messrs. B. Westermann & Co., or E. Steiger, booksellers, New York.

JOHN M. MAISCH,
145 North Tenth Street, Philadelphia, Pa.

American Journal of Medical Sciences, Philadelphia.

Dental Cosmos, Philadelphia.

Twelfth Annual Report of the Board of Directors and Officers of the Longview Asylum to the Governor of Ohio, for the year 1870. Cincinnati.

The Pharmacist, Chicago.

Pacific Medical and Surgical Journal, San Francisco.

The Canadian Pharmaceutical Journal. Edited by E. B. Shuttleworth. 1871.

Pharmaceutical Journal and Transactions, London.

Proceedings of the Philosophical Society of Glasgow, vol. vi, No. 4, vol. vii, Nos. 1, 2, 3.

Bulletin de la Société de Pharmacie de Bruxelles. 1871, No. 3 to 11.

Neues Jahrbuch für Pharmacie, Speyer.

Wittstein's Vierteljahresschrift, München.

Buchner's Neues Repertorium, München.

Sitzungsberichte der Königl. Bayer. Akademie der Wissenschaften. München. 1870 complete. 1871, 1, 2.

Die Aufgabe des chemischen Unterrichts gegenüber den Anforderungen der Wissenschaft und der Technik. München, 1871.

Nachrichten von der K. Gesellschaft der Wissenschaften, &c. Göttingen, 1870.

Jahresbericht über die Fortschritte der Pharmacognosie, Pharmacie, und Toxicologie, für 1869. Herausgegeben von Prof. Dr. Wiggers und Prof. Dr. A. Husemann.

Archiv der Pharmacie, Prof. Dr. H. Ludwig, Redacteur. Halle, 1870, 1871.

Zeitschrift des allgemeinen oesterreichischen Apotheker-Vereines. Wien, 1871.

Pharmacopœa Norvegica. Editio altera. Regio auctoritate edita. Christianiæ, 1870. Impensis Alb. Cammermeyer.

Medicinal-Taxt for Norge, som ifölge Kongl. Placat af 10de November, 1855, er gjældende fra 1ste Januar, 1856, indtil videre. Christiania, 1855.

Tillæg til Medicinal-Taxten for Norge, udfærdiget af den Kongelige Norske Regjerings Departement for det Indre i Henhold til Kongelig Resolution af 6te Juli, 1861. Christiania, 1862.

Tredie Tillæg til Medicinal-Taxten for Norge, &c. Christiania, 1864.

Medicinal-Taxt for Norge, ifolge naadigst Bemyndigelse utfærdiget af den Kongelige Norske Regjerings Departement for det Indre og gjældende fra 1ste Januar, 1866, indtil videre. Christiania, 1865.

Om Marienbad dess Helsokällor och Bad, af N. P. Hamberg, M.D. Aftryck ur Hygiea. Stockholm, 1870.

Om Karbolsyra, af Dr. N. P. Hamberg. Aftryck ur Hygiea. Stockholm, 1871.

AUTHORIZED AGENTS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Nominated by the Treasurer and Permanent Secretary, and approved by the President, to carry out the resolution passed at the fifth session of the 18th Annual Meeting.

California,	James G. Steele, 521 Montgomery St.,	San Francisco.
Dist. of Columbia,	Joseph W. Nairn, 901 Pennsylvania Ave.,	Washington.
Delaware,	Linton Smith, M.D., 7th & Market Sts.,	Wilmington.
Illinois,	Louis Strehl,	Chicago.
Kansas,	Robert J. Brown, Fifth & Shawnee Sts.,	Leavenworth.
Kentucky,	C. Lewis Diehl, First & Walnut Sts.,	Louisville.
Louisiana,	John H. Pope, Jackson & Prytania Sts.,	New Orleans.
Maryland,	J. Faris Moore, Howard & Madison Sts.,	Baltimore.
Massachusetts,	Henry W. Lincoln, Charles & Chestnut,	Boston.
Michigan,	William Johnston, 153 Jefferson Ave.,	Detroit.
Missouri,	William H. Crawford, 731 Washington Ave.,	St. Louis.
New Jersey,	Charles B. Smith, 831 Broad St.,	Newark.
New York,	Daniel C. Robbins, 91 Fulton St.,	New York.
	George C. Close, Smith & Schermerhorn,	Brooklyn.
Ohio,	Hiram H. Hill, Fifth & Race Sts.,	Cincinnati.
Pennsylvania,	John M. Maisch, 145 North Tenth St.,	Philadelphia.
	Alfred J. Rankin, 45 Sixth St.,	Pittsburg.
Tennessee,	Henry C. Steever, 2d & Madison Sts.,	Memphis.

CONSTITUTION AND BY-LAWS

OF THE

AMERICAN PHARMACEUTICAL ASSOCIATION.

CONSTITUTION.

ARTICLE I. This Association shall be called the "American Pharmaceutical Association." Its aim shall be to unite the educated and reputable Pharmaceutists and Druggists of the United States in the following objects:

1. To improve and regulate the drug market, by preventing the importation of inferior, adulterated, or deteriorated drugs, and by detecting and exposing home adulteration.

2. To encourage proper relations between Druggists, Pharmaceutists, Physicians, and the people at large, which shall promote the public welfare, and tend to mutual strength and advantage.

3. To improve the science and the art of Pharmacy by diffusing scientific knowledge among Apothecaries and Druggists, fostering pharmaceutical literature, developing talent, stimulating discovery and invention, and encouraging home production and manufacture in the several departments of the drug business.

4. To regulate the system of apprenticeship and employment, so as to prevent, as far as practicable, the evils flowing from deficient training in the responsible duties of preparing, dispensing, and selling medicines.

5. To suppress empiricism, and to restrict the dispensing and sale of medicines to regularly educated Druggists and Apothecaries.

6. To uphold standards of authority in the Education, Theory, and Practice of Pharmacy.

7. To create and maintain a standard of professional honesty equal to the amount of our professional knowledge, with a view to the highest good and greatest protection to the public.

ARTICLE II. This Association shall consist of active, life, and honorary members, and shall hold its meetings annually.

ARTICLE III. The officers of the Association shall be a President, three Vice-Presidents, a Permanent Secretary, a Local Secretary, and a Treasurer, all of whom, with the exception of the Permanent Secretary, shall be elected annually, and shall hold office until an election of successors.

ARTICLE IV. All moneys received from life membership, together with such funds as may be bequeathed, or otherwise donated to the Association, shall be invested by the Treasurer in United States Government or State securities, the annual interest of which only shall be used by the Association for its current expenses.

ARTICLE V. Every proposition to alter or amend this Constitution shall be submitted in writing, and may be balloted for at the next Annual Meeting, when, upon receiving the votes of three-fourths of the members present, it shall become a part of this Constitution.

BY-LAWS.

CHAPTER I.

Of the President and Vice-Presidents.

ARTICLE I. The President shall preside at all meetings of the Association; in his absence or inability, one of the Vice-Presidents, or in the absence of all, a President pro tempore shall perform the duties of President.

ARTICLE II. In the absence of the Permanent Secretary, the President shall appoint a Recording Secretary pro tempore.

ARTICLE III. In meetings the President shall take the chair at the proper time; announce all business; receive all proper motions, resolutions, reports, and communications, and order the vote upon all proper questions at the proper time.

ARTICLE IV. In all ballotings, and on questions upon which the yeas and nays are taken, the President is required to vote, but his name should be called last; in other cases he shall not vote, unless the members be equally divided, or unless his vote, if given to the minority, will make the decision equal, and in case of such equal division the motion is lost.

ARTICLE V. He shall enforce order and decorum; it is his duty to hear all that is spoken in debate, and in case of personality or impropriety he shall promptly call the speaker to order. He shall decide all questions of order, subject to the right of appeal, unless in cases where he prefers to submit the matter to the meeting; decide promptly who is to speak when two or more members rise at the same moment; and be careful to see that business is brought forward in proper order.

ARTICLE VI. He shall have the right to call a member to the chair, in order that he may take the floor, in debate. He shall see that the Constitution and By-Laws are properly enforced.

ARTICLE VII. He shall appoint all committees, unless provided for in the By-Laws, or otherwise directed by the Association.

ARTICLE VIII. He shall sign the certificates of membership, and countersign all orders on the Treasurer. He shall obey the instructions of the Association, and authenticate by his signature, when necessary, its proceedings.

ARTICLE IX. He shall present at each annual meeting a report of the operations of the Association during the year, with such information pertaining to its condition and prospects, and the object it has in view, together with such suggestions for its future management, as may seem to him proper.

CHAPTER II.

Of the Permanent Secretary.

ARTICLE I. The Permanent Secretary shall be elected to hold office permanently, during the pleasure of the Association. He shall receive from the Treasurer an annual salary of $500, and the amount of his expenses incident to the meeting in addition to his salary.

ARTICLE II. He shall preserve fair and correct minutes of the proceedings of the meetings, and carefully preserve, on file, all reports, essays, and papers of every description received by the Association, and shall be charged with the necessary foreign and scientific correspondence, and with editing, publishing, and distributing the Proceedings of the Association, under the direction of the Executive Committee.

ARTICLE III. He shall read all papers handed him by the President for that purpose; shall call and record the yeas and nays whenever they are required to be called; shall notify the chairman of every special committee of his appointment, giving him a list of his colleagues, and stating the business upon which the committee is to act; and shall notify every member of the time and place of each annual meeting.

ARTICLE IV. He shall be, ex-officio, a member of the Executive Committee.

CHAPTER III.

Of the Local Secretary.

ARTICLE I. The Local Secretary shall be elected annually, near the close of the Annual Meeting, and shall reside at or near the place where the next Annual Meeting of the Association is to be held.

ARTICLE II. He shall assist the Permanent Secretary in his duties; shall co-operate with any local committee in making arrangements for the Annual Meeting; shall correspond with the chairmen of the several committees, and with other members, in advance of the meeting, for the promotion of its objects, and shall have the custody of specimens, papers, and apparatus destined for use or exhibition at the meetings.

CHAPTER IV.

Of the Treasurer.

ARTICLE I. The Treasurer shall collect and take charge of the funds of the Association, and shall hold, sign, and issue the certificates of membership.

ARTICLE II. He shall pay no money except on the order of the Secretary, countersigned by the President and accompanied by the proper vouchers.

ARTICLE III. He shall report to the Executive Committee, previous to each Annual Meeting, the names of such members as have failed to pay their annual contributions for three years, and also the names of such as have failed to return their certificates of membership after having been officially disconnected with the Association, and having been duly notified to return them.

ARTICLE IV. He shall present a statement of his accounts at each Annual Meeting, that they may be audited; he shall receive an annual salary of $300, and the amount of his expenses incident to the meeting in addition to his salary.

CHAPTER V.

Of Committees.

ARTICLE I. There shall be elected annually five standing committees: An Executive Committee, a Committee on the Progress of Pharmacy, and a Committee on the Drug Market, each to consist of five members; a Committee on Papers and Queries, and a Business Committee, each to consist of three members.

ARTICLE II. The Executive Committee, of which the Permanent Secretary shall be a member, shall have charge of the revision of the Roll, the investigation of application for membership, and the publication of the Proceedings.

ARTICLE III. They shall report at each meeting a revised roll of members, with appropriate notices of deceased members, and the names of any who, having become disconnected with the Association, refuse to return their certificates of membership as provided by the By-Laws.

ARTICLE IV. They shall furnish to each member of the Association not in arrears one copy of the annual publication of the Proceedings, which publication shall contain the correct roll of members, full minutes of the several sittings, the Report of the President and of the Committees, together with such addresses, scientific papers, discussions, notices of new processes, and preparations, as the Executive Committee may deem worthy of insertion, and shall fix the price at which the Proceedings shall be sold.

ARTICLE V. The Committee on the Progress of Pharmacy, of which the Local Secretary shall be a member, shall report annually to the Association on the improvements in Chemistry, Practical Pharmacy, and the collateral

branches, and on any new works bearing on these subjects published in this country or elsewhere.

ARTICLE VI. The Committee on the Drug Market shall report annually the condition of the Drug Market, the fluctuations in the supply and demand of drugs and chemicals, the variations in quality, and the adulterations and sophistications coming under their observation or reported to them by others, with any suggestions or recommendations for the improvement or better regulation of the trade; and they shall be authorized to report upon any adulterations and sophistications of immediate interest, through the Pharmaceutical Journals, as soon as practicable after their discovery.

ARTICLE VII. The Committee on Papers and Queries shall receive all Reports of Standing Committees, and all papers for the Association. They shall designate which of them shall be read at length, or which by title, and shall be furnished with a synopsis of each by the authors. They shall, in connection with the Business Committee, arrange the time which may be most appropriate or convenient for reading them.

ARTICLE VIII. The Committee on Papers and Queries shall report, near the close of each Annual Meeting, a proper number of questions of scientific and practical interest, the answers to which may advance the interests of Pharmacy, and shall procure the acceptance of as many such questions for investigation as may be practicable.

ARTICLE IX. Any person writing a paper for the Association must, to insure its publication in the Proceedings, refer the same with a synopsis of its contents to the Committee on Papers and Queries previous to the third session.

ARTICLE X. It shall be the duty of every Standing Committee making a report annually to the Association, in like manner to furnish a copy of the same, together with a synopsis of its contents, to the Committee on Papers and Queries before the first annual session of the Association.

ARTICLE XI. The Business Committee shall be charged with the transmission of unfinished business from one Annual Meeting to another, and with collecting, arranging, and expediting the business during the sessions of the Annual Meetings.

CHAPTER VI.

Of Membership.

ARTICLE I. Every pharmaceutist and druggist of good moral and professional standing, whether in business on his own account, retired from business, or employed by another, and those teachers of Pharmacy, Chemistry, and Botany, who may be specially interested in Pharmacy and Materia Medica, who, after duly considering the objects of the Association and the obligations of its Constitution and By-Laws, are willing to subscribe to them, are eligible to membership.

ARTICLE II. Any person eligible to membership may make application in writing, with the indorsement of any two members of the Association in

good standing, to any member of the Executive Committee, who shall report his application to the said Committee.

If after investigating his claims they shall approve his election, they shall, at the earliest time practicable, report his name to the Association, and he may be elected by two-thirds of the members present on ballot.

Article III. No person shall be a member of this Association, nor shall his name be placed upon the roll, until he shall have signed the Constitution and paid into the Treasury the sum of *Five Dollars* as an initiation fee, and the annual contribution for the current year, with the exception of *Delegates*, as provided in Article VI of this chapter.

Article IV. Every member shall pay in advance to the Treasurer the sum of *Five Dollars* as his yearly contribution, and is liable to lose his membership by neglecting to pay said contribution for *three successive years.*

Article V. Any member who shall pay to the Treasurer the sum of *Seventy-five dollars at one time*, shall become a life member and shall be exempt from all future annual contributions.

Article VI. All Colleges of Pharmacy or local Pharmaceutical organizations shall be entitled to *five* delegates, as their representatives in the Annual Meetings, who, *if present*, become members of the Association on signing the Constitution and paying the annual contribution for the current year, without paying the usual initiation fee.

Article VII. Members shall be entitled on the payment of *Five Dollars* to receive a certificate of membership signed by the President, one Vice-President, Permanent Secretary, and Treasurer, at the same time covenanting to return the same to the proper officer on relinquishing their connection with the Association.

Article VIII. Persons constitutionally elected to membership become permanent members, and their membership can cease only by resignation, non-payment of dues, or by expulsion, as provided in these By-Laws.

Article IX. Resignation of membership shall be made in writing to the Permanent Secretary or Treasurer, but no resignation shall be accepted from any one who is in arrears to the Treasury.

All resignations shall be acknowledged in writing by the officer who receives them, and shall be reported at the next Annual Meeting.

Article X. Any member may be expelled for improper conduct or the violation of the Constitution, By-Laws, or Ethics adopted by the Association, but no person shall be expelled unless he shall receive for expulsion two-thirds of all the votes cast at some regular session.

Article XI. Pharmaceutists, chemists, and other scientific men, who may be thought worthy the distinction, may be elected honorary members. They shall not, however, be required to contribute to the funds, nor shall they be eligible to hold office, or vote at the meetings.

CHAPTER VII.

Of Meetings.

ARTICLE I. The meetings shall be held annually; provided, that in case of failure of this from any cause the duty of calling the Association together shall devolve upon the President, or one of the Vice-Presidents, with the advice and consent of the Executive Committee.

ARTICLE II. The order of business at the first session of each Annual Meeting shall be as follows:

Section 1. Promptly, at the time named in the notice issued for the meeting, the President, or in his absence one of the Vice-Presidents, or in their absence a President pro tempore, shall officiate.

Section 2. In the absence of the Permanent Secretary the President shall appoint a Recording Secretary pro tempore, who shall perform the duties of the Permanent Secretary until his arrival.

Section 3. Nineteen members shall constitute a quorum for the transaction of business.

Section 4. The President shall appoint a Committee of three persons to examine the credentials of delegates, which Committee shall attend to that duty, and report to the Association as soon as practicable, when the Secretary shall call the roll, noting the names of the delegates and members in attendance.

Section 5. The Executive Committee shall present names recommended for membership, when the President, having ascertained that a quorum of members is present, shall order an election by ballot, and appoint two tellers.

Section 6. Reports of Committees shall be presented, read by their titles, the synopsis, or in full, and laid on the table for future consideration.

Section 7. The President shall call the roll of Colleges and Associations represented, requesting each delegation in turn to appoint one member, the persons so selected to act as a Committee to nominate officers for the ensuing year; in addition to which he shall appoint five members, who are not delegates, to act with the Committee.

Section 8. The Reports of the Executive Committee, of the Permanent Secretary, and of the Treasurer, shall be read by title or in full.

Section 9. Incidental business may be called up by the Business Committee.

Section 10. The first session shall close with the reading of the President's Annual Report, and the reference of any portions of it requiring action, to an appropriate Committee.

ARTICLE III. The order of business at the second session of each Annual Meeting shall be as follows:

Section 1. The President shall call the Association to order.

Section 2. The Secretary shall read the minutes of the preceding meeting, which may be amended if necessary, and shall then be approved.

Section 3. The Report of the Committee on Nominations shall be read;

when the President shall appoint tellers, and the Officers and Committees nominated shall be balloted for.

Section 4. The officers elected shall take their respective places.

Section 5. The Executive Committee shall present names recommended for membership, when a ballot shall be ordered for their election.

Section 6. Reports of Standing Committees shall be read.

Section 7. Reports of Special Committees shall be read.

Section 8. A Committee of five shall be appointed to examine and report upon specimens exhibited.

Section 9. The second session shall close with the examination of specimens on exhibition.

ARTICLE IV. The order of business at subsequent sessions shall be determined by the Business Committee, with the consent of the Association.

CHAPTER VIII.

Of Rules of Order and Debate.

ARTICLE I. The ordinary rules of parliamentary bodies shall be enforced by the presiding officer, from whose decision, however, appeals may be taken, if required by two members, and the meeting shall thereupon decide without debate.

ARTICLE II. When a question is regularly before the meeting and under discussion, no motion shall be received but to adjourn, to lay on the table, for the previous question, to postpone to a certain day, to commit or amend, to postpone indefinitely; which several motions have precedence in the order in which they are arranged. A motion to adjourn shall be decided without debate.

ARTICLE III. No member may speak twice on the same subject, except by permission, until every member wishing to speak has spoken.

ARTICLE IV. On the call of any two members, the yeas and nays shall be ordered, when every member shall vote, unless excused by a majority of those present, and the names and manner of voting shall be entered on the minutes.

CHAPTER IX.

Miscellaneous.

ARTICLE I. In all such points of order as are not noticed in these By-Laws, the Association shall be governed by the established usages in all assemblies governed by parliamentary rules.

ARTICLE II. Every proposition to alter or amend these By-Laws shall be submitted in writing, and may be balloted for at any subsequent session, when, upon receiving the votes of three-fourths of the members present, it shall become a part of the By-Laws.

ARTICLE III. No one or more of these By-Laws shall be suspended.

FORM OF APPLICATION FOR MEMBERSHIP.

Approving of the objects of the American Pharmaceutical Association, I am desirous of joining it in membership; and having read its Constitution and By-laws, I hereby signify my approval of the same, and subscribe to them.

.....

Address, ...

I hereby agree to return my certificate of membership in the American Pharmaceutical Association to the Treasurer of that body, if I shall hereafter cease to be connected in membership with it.

.....

TESTIMONIALS.

The undersigned, members in good standing, being personally acquainted with of testify to his moral character, his skill as a practical Druggist and Pharmaceutist, and his professional probity and good standing, and they recommend him for membership in the American Pharmaceutical Association.

Name. Address.

ROLL OF MEMBERS.

HONORARY MEMBERS.

UNITED STATES OF AMERICA.

Montgomery J. Bailey, M.D.,	New York,	New York,	1856
Elias Durand,	Philadelphia,	Penna.,	1857
Daniel B. Smith,	"	"	1856
George B. Wood, M.D.,	"	"	1857

FOREIGN COUNTRIES.

AUSTRIA.

Anton von Waldheim, *Vienna*, 1871.

BELGIUM.

A. T. De Meyer, *Brussels*, 1868. Norbert Gille, *Brussels*, 1868.

ENGLAND.

Dr. J. Attfield, *London*, 1871. Henry Deane, *London*, 1868.
Henry B. Brady, *Newcastle-on-Tyne*, 1871. Daniel Hanbury, *London*, 1868.
Dr. J. Redwood, *London*, 1871.

FRANCE.

Dr. A. Chevallier, *Paris*, 1871. Dr. Augustin A. Délondre, *Sêvres*, 1871.
Dr. J. Léon Soubeiran, *Paris*, 1871.

GERMANY.

Dr. Adolf Duflos, *Breslau*, 1871. Dr. H. Ludwig, *Jena*, 1871.
Dr. Hermann Hager, *Berlin*, 1868. Dr. Frederick Mohr, *Bonn*, 1868.
Dr. G. C. Wittstein, *Munich*, 1868.

NETHERLANDS.

Dr. J. E. De Vrij, *Hague*, 1871.

RUSSIA.

Dr. Arthur Casselmann, *St. Petersburg*, 1868. Dr. G. Dragendorff, *Dorpat*, 1868.

SWITZERLAND.

Dr. F. A. Flückiger, *Berne*, 1868.

ACTIVE MEMBERS.

UNITED STATES OF AMERICA.

ALABAMA.

Mobile.

Candidus, Philip Charles, . 1857
Mohr, Charles, . . . 1871
Parker, Charles G., . . 1870
Primo, Manuel, . . . 1868

Selma.

Carrel, Alexander S., . . 1871
McVoy, James L., . . . 1871
Wilkins, John D., . . . 1871

ARKANSAS.

Little Rock.

Beidelman, John Wilmer, . 1871
McAlmont, John J., M.D., . 1871
Naulty, William H., . . 1870

CALIFORNIA.

San Francisco.

Calvert, John, . . . 1870
Dickey, George S., . . . 1859
Geary, William, . . . 1870
Greatrex, Thomas J., . . 1869
McKay, George J., . . 1864
Moffit, John W., . . . 1870
Moffitt, Thomas S., . . 1861
Painter, Emlen, . . . 1870
Simpson, William, . . . 1870
Steele, Henry, ... 1859
Steele, James G., . . . 1859
Wenzell, William T., . . 1870

Hayward.

Richards, Edward J., . . 1870

Napa City.

Colman, Frederick W., . . 1865

Mare Island.

Anderson, Joseph E , . . 1869

Petaluma.

Maynard, Frederick T., . . 1864

Vallejo, Solano Co.

Frost, James, ... 1870
Topley, James, . . . 1869

Visalia, Tulare Co.

Blake, James W., . . . 1869

COLORADO.

Central City.

Best, John, ... 1866

COLUMBIA, DISTRICT OF.

Washington.

Bannvart, Charles A., . . 1856
Bury, Edward Berkley, . . 1870
Callan, James Nicholas, . . 1857
Cromwell, Zachariah William, 1870
Ferguson, Robert Benedict, . 1867
Fitzgerald, John Edward, . 1869
Fitzgerald, Joseph Stanislaus, 1869
Gaither, Francis Singleton, . 1860
Gristock, Charles F., . . 1864
Heller, P. H., ... 1871
Hickling, Daniel Percy, . . 1867
Howard, George M., . . 1871
Kidwell, John Lawrence, . 1856
Lineaweaver, Kline Cyrus, . 1864
Milburn, John Alexander, . 1858
Murray, Talbot Chambers, . 1863
Nairn, Joseph Wilson, . . 1858
O'Donnell, James Dominic, . 1870
Rothrock, Weller, . . . 1869
Sayre, Charles Le Roy, . . 1869
Simms, Giles Green Craycroft, 1860
Sylvester, Samuel Retallack, . 1858
Thompson, Wiliam S., . . 1871
Tyson, Samuel Ellicott, M.D., 1857

CONNECTICUT.

Hartford.

Lambe, John J., . . . 1868

New Haven.

Chapin, Harlow, . . . 1871

Daggett, Alfred, Jr., . . 1865
Daggett, Henry, . . . 1871

Stamford.

Morrison, Samuel C., . . 1871

Waterbury.

Dikeman, Nathan, . . . 1865

DELAWARE.

Wilmington.

McInall, Edward, Jr., . . 1867
Shoemaker, Benjamin, . . 1867
Simms, John H., M.D., . . 1867
Smith, Linton, M.D., . . 1870

New Castle.

Ferris, Charles E., M.D., . 1867

FLORIDA.

Fort George.

Rollins, John Francis, . . 1859

GEORGIA.

Atlanta.

Daniels, John B., . . . 1871
Peacock, Frederick S., . . 1871
Schumann, Theodore, . . 1860

Augusta.

Land, Robert H., . . . 1859

Macon.

Hunt, Leonard W., . . 1871
Mason, Frederick E., . . 1871
Zeilin, John Henry, . . 1859

Milledgeville.

Clark, John M., . . . 1857
Grieve, Fleming C., . . 1859
Cotting, William A., . . 1869

Rome.

Fenner, William R., . . 1871

ILLINOIS.

Aurora.

Howell, C. C., ... 1871

Belleville.

Baker, Nathan T., . . . 1871
Steingoetter, Henry, . . 1871

Bloomington.

Dyson, Dunbar S., . . . 1856

Bradford, Stark Co.

Plummer, David G., . . 1869

Cairo.

Macdonald, George, . . 1871

Chicago.

Bartlett, N. Gray, . . . 1864
Biroth, Henry, . . . 1865
Blaney, James V. Z., M.D., . 1865
Bliss, Sylvester S., . . . 1865
Blocki, William F., . . 1863
Borcherdt, Julius C., . . 1867
Breed, Marvin A., . . . 1866
Brown, Thomas, . . . 1865
Bryan, Alexander B., . . 1865
Bryan, Frederick A., . . 1865
Buck, George, . . . 1860
Curth, Nicholaus T., . . 1865
Ebert, Albert E., . . . 1864
Ehrman, John W., . . 1867
Fiske, Calvin J., . . . 1869
Fitch, Charles H., . . . 1869
Fredigke, Charles Christian, . 1869
Fuller, Henry W., . . . 1865
Fuller, Oliver F., . . . 1869
Gale, Edwin O., . . . 1857
Gale, William H., . . . 1857
Garrison, Herod Dailey, . 1869
Grassly, Charles William, . 1868
Hambright, George M., . . 1865
Hanning, John T., . . . 1864
Heuermann, Henry W., . . 1869
Heylman, Charles, . . . 1865
Hirsh, Joseph, . . . 1869
Hooper, John H., . . . 1865
Jacobus, Judson S., . . 1870
Jamieson, Thomas N., . . 1869
Jones, Charles S., . . . 1869
Mahla, Frederick, Ph.D., . 1864
McPherson, George, . . 1865

Mead, Nehemiah, . . . 1865
Mill, James W., . . . 1864
Milleman, Philip L., . . 1866
Murray, Allen F., . . . 1869
Paine, James D., . . . 1857
Palmer, Hosea W., . . 1870
Parsons, John, . . . 1865
Patterson, Theodore H., . . 1869
Reinhold, William, . . . 1866
Sargent, Ezekiel H., . . 1864
Schroeder, Nobel, . . . 1866
Sharp, J. Perine, . . . 1865
Smith, Albert A., . . . 1869
Strehl, Louis C., . . . 1866
Sweet, Henry, ... 1865
Tourtelot, Emil P., . . 1866
Tourtelot, Frank J., . . 1866
Vanderburgh, Abram C., . 1869
Whitfield, Thomas, . . . 1865
Willard, Joseph, . . . 1865
Wilson, Julius H., . . . 1869
Woltersdorf, Louis, . . 1865

Galesburg.

Clark, Albert B., Jr., . . 1868
Johnson, Newton A., . . 1869

Highland.

Mueller, Adolphus, . . . 1871

Kankakee.

O'Farrell, Henry T., . . 1869

Livingston.

Gallagher, James, . . . 1865

Peoria.

Colburn, Walter, . . . 1869
Miles, Benjamin Franklin, M.D., 1869
Singer, Peter J., . . . 1869

Quincy.

Malone, Charles F., . . 1869
Schroeder, Hermann, . . 1871

Young America.

Peirpoint, Newton, . . 1869

INDIANA.

Fort Wayne.

Van Sweringen, Hiram, . . 1865

Indianapolis.

Bristol, A. J., ... 1871
Dryer, James W., . . . 1871
Miller, Edward T., . . . 1859
Schrader, Henry, . . . 1869
Sloan, George W., . . . 1857

La Porte.

West, Frederick, . . . 1866

Logansport.

Brown, George W., . . 1865

New Albany.

Scribner, Benjamin Franklin, 1858

Terre Haute.

Davis, Charles A., . . . 1871

IOWA.

Burlington.

Matthews, Charles C., . . 1869

Davenport.

Ballard, John W., . . . 1871

Des Moines.

Hunt, Nathan W., . . . 1869

Fort Madison.

Schaefer, George H., . . 1871

Guttenberg, Clayton Co.

Vogel, Richard, . . . 1867

Le Mars, Plymouth Co.

Bennett, Charles H., . . 1869

Washington.

Cook, William A., . . . 1871

KANSAS.

Fort Scott.

Connor, Lucius E., . . . 1869
Ingalls, Albert O., . . . 1869

Junction City.

Porter, Edward T., . . 1867

Lawrence.

Leis, George, ... 1869

Leavenworth.

Brown, Robert J., . . . 1862
Harrop, Joseph W., . . 1869
Parham, Robert, . . . 1868

Olathe.

Marshall, John B., . . . 1871

Poala, Miami Co.

Price, Joseph Warren, . . 1869

Topeka.

Greeno, Henry S., . . . 1869

KENTUCKY.

Covington.

Mauss, Richard G., . . 1869
Nodler, Peter, ... 1870

Louisville.

Brown, James E., . . . 1870
Carey, George H., . . . 1866
Colgan, John, ... 1867
Diehl, Conrad Lewis, . . 1863
Hughes, Henry A., . . 1857
Jenkins, Thomas E., M.D., . 1866
Jones, Simon N., . . . 1870
Kern, Flora, Jr., . . . 1868
Newman, George A., . . 1866
Pfingst, Ferdinand J., . . 1867
Rademaker, Charles J., . . 1867
Sacksteder, Francis, . . 1867
Strassel, William, . . . 1870
Sutton, Ellsworth S., . . 1871
Sutton, Peter P., . . . 1871
Wilder, Graham, . . . 1868

LOUISIANA.

New Orleans.

Keaton, M. E. F., . . . 1871
Keffer, Frederick A., . . 1862
Keffer, William P., . . 1866
Pope, John H., . . . 1860

Bayou Goula.

Viallon, Paul L., . . . 1870

New Iberia.

Lee, James A., . . . 1856

Thibodeaux.

Thibodeaux, Joseph G., . . 1870

MAINE.

Augusta.

Dana, Alfred C., . . . 1859
Partridge, Charles K., . . 1867

Bangor.

Harlow, Noah Sparhawk, . 1859

Camden.

Sherman, Oliver G., M.D., . 1869

Eastport.

Shead, Edward E., . . . 1866

Lewiston.

Cook, John G., . . . 1859

Portland.

Cummings, Henry T., M.D., . 1853
Hay, Henry H., . . . 1867
Jorden, William H., . . 1871
Patten, John F., . . . 1871
Phillips, Walter F., . . 1859

MARYLAND.

Baltimore.

Andrews, George W., Phar.D., 1856
Baxley, J. Brown, Phar. D., . 1856
Brown, Alexander E., . . 1863
Brown, William H., . . 1863
Burrough, Edward Ewalt, . 1869
Burrough, Horace, . . . 1869
Caspari, William, . . . 1856
Dannattel, George F., . . 1867
Dohme, Charles E., . . 1863
Dohme, Lewis, . . . 1859
Donavin, Matthew W., . . 1867
Duke, Augustin Whitfield, . 1870
Elliott, Henry A., . . . 1859
Emich, Columbus V., . . 1863
Frames, James P., . . . 1868
German, John W., . . . 1870
Gossman, Adam J., . . 1870
Graefle, Frederick Alexander, 1870
Hancock, John Francis, . . 1863
Hancock, John Henry, . . 1870

Jefferson, John H. B., . . 1868
Jennings, N. Hynson, . . 1857
Kirby, Thomas E., M.D., . 1863
Lauer, Michael J., . . . 1865
Lautenbach, Robert, M.D., . 1870
Leamy, James C., . . . 1867
Lilly, Alonzo, Jr., . . . 1863
Monsarrat, Oscar, . . . 1856
Moore, J. Faris, M.D., Phar.D., 1856
Morrison, S. Ellwood, . . 1863
Muth, John P., . . . 1864
O'Brien, Joseph C., . . 1863
Osburn, William H., . . 1870
Perkins, Elisha H., . . 1857
Potts, Jesse Newport, . . 1870
Reifsnider, William E., . . 1864
Roberts, Joseph, Phar.D., . 1856
Russell, Eugene J., . . . 1856
Russell, E. Walton, Phar.D., . 1863
Sappington, Richard, M.D., . 1870
Sharp, Alpheus P., . . . 1855
Skinner, Joseph G., . . 1864
Smith, Edward A., . . . 1870
Smith, J. Jacob, . . . 1856
Suding, Henry A., . . . 1870
Tilyard, Charles L., . . 1867
Thompson, William S., . . 1856
Thompson, Wilbur F., . . 1870
Thomsen, John J., . . . 1856
Webb, John A., . . . 1870
Winkleman, John H., . . 1864
Wolf, Joseph A., . . . 1860
Worthington, Joseph Muse, . 1868

Annapolis.

Button, Elijah, . . . 1870
Street, Daniel B., . . . 1867

Cumberland.

Campbell, John H. B., . . 1870

Frederick.

Pettit, Henry M., . . . 1860

Hagerstown.

Winter, Jonas, . . . 1863

MASSACHUSETTS.

Boston.

Atwood, Charles H., . . 1856
Babcock, James F., . . 1865
Babo, Leopold, . . . 1859
Bassett, Charles Hamson, . 1867
Blossom, William A., . . 1871
Boyden, Ashel, . . . 1853
Brown, Joseph Taylor, . . 1859
Brown, Joseph Taylor, Jr., . 1869
Brown, William, . . . 1858
Burnett, Joseph, . . . 1852
Burnham, George H., . . 1871
Campbell, Isaac T., . . 1859
Canning, Henry, . . . 1865
Carter, Solomon, . . . 1865
Clock, Frank B., . . . 1865
Colcord, Samuel M., . . 1852
Colton, James B., . . . 1865
Connor, Thomas J., . . 1867
Cutler, Edward Waldo, . . 1859
Doliber, Thomas, . . . 1859
Doolittle, Erastus Hubbard, . 1865
Dows, Gustavus D., . . 1865
Drury, Linus Dana, . . 1871
Dyer, J. Howes, . . . 1865
Eaton, Charles I., . . . 1867
French, George Washington, 1865
Fowle, Henry D., . . . 1853
Gleeson, James A., . . . 1859
Gleeson, Michael H., . . 1859
Hazeltine, Charles Benjamin R., 1867
Henchman, Daniel, . . 1853
Hoagland, Pratt R., . . 1868
Hollis, Thomas, . . . 1853
Horton, William Francis, . 1869
Jenkins, Luther L., . . 1867
Kelley, Edward Samuel, . 1871
Kent, Robert R., . . . 1855
Kidder, Darius B., . . . 1858
Leary, John Thomas, . . 1869
Lincoln, Henry Ware, . . 1853
Littlefield, Alvah, . . . 1856
Lowd, John Colby, . . 1871
Markoe, George Frederick H., 1863
Melvin, James S., . . . 1853
Metcalf, Theodore, . . . 1857
Nowell, William F., . . 1867
Parker, Joseph L., . . 1864
Patten, Ichabod Bartlett, . 1858

Perry, Edward H., . . 1865
Restieaux, Thomas, . . 1853
Ricker, George D., . . . 1858
Rogers, Charles F., . . 1860
Sheppard, Samuel A. D., . 1865
Smalley, Elijah, . . . 1860
Tappan, Charles Ellridge, . 1871
Tompkins, Orlando, . . 1859
Tower, Levi, Jr., . . . 1860
Turner, T. Larkin, . . . 1853
Underwood, Charles G., . 1865
Wiley, Abraham S., . . 1857
Wilkins, Daniel G., . . 1865
Wilson, Benjamin O., . . 1859
Woodbridge, Geo. Washington, 1859

Brookline.

Bird, George W., . . . 1867

Cambridge.

Hubbard, John H., . . . 1866
James, Thomas P., . . . 1857

Cambridgeport.

Arnold, George K., . . 1871
Bayley, Augustus R., . . 1859
Orne, Joel S., ... 1859
Richardson, James H., . . 1868
Thayer, Henry, . . . 1858

Charlestown.

Dodge, Levi G., . . . 1859
Kettell, George P., . . 1867
Stacey, Benjamin Franklin, . 1860
Warfield, Abijah Baker, . 1870

Chelsea.

Buck, John, ... 1855

Dorchester.

Sanborn, Jeremiah, Jr., . . 1865

East Abington.

Arnold, Ezra W., . . . 1868
Estes, Joseph Josselyn, . . 1870

Feltonville.

Safford, William Augustus, . 1865

Great Barrington.

Whiting, Frederick T., . . 1863

Hingham.

Hunt, James L., . . . 1865

Ipswich.

Geyer, Andrew, . . . 1865

Lawrence.

Whitney, Henry M., . . 1859

Lowell.

Bailey, Frederick, . . . 1869
Hood, Charles I., . . . 1871
Kidder, Samuel, Jr., . . 1859

Lynn.

Proctor, Benjamin, . . . 1859

Maynard.

Wouldhave, Thomas, . . 1871

New Bedford.

Blake, James E., . . . 1866

Newburyport.

Goodwin, William W., . . 1853
Smith Samuel A., . . . 1859

North Adams.

Holden, Henry C., . . . 1870
Pettis, Newton C., . . . 1868

North Andover.

Berrian, George W., Jr., . 1857

Rockport.

Blatchford, Eben, . . . 1857
Blatchford, Eben, Jr., . . 1865

Roxbury.

Savell, Charles E., . . . 1860

Salem.

Emerton, James, . . . 1859

Sheffield.

Bidwell, Marshall Spring, . 1871

Springfield.

Bigelow, Edmund, . . . 1860

Wakefield.

Melzar, Augustus P., . . 1856

Worcester.

Bright, James Evesson, . . 1868
McConville, Michael S., . 1859
McConville, Thomas A., . 1864
Scott, David, ... 1855
Scott, Nelson R, . . . 1859

MICHIGAN.

Almont.

Richardson, Daniel W., . . 1866

Ann Arbor.

Douglass, Samuel H., M.D., . 1869
Eberbach, Ottmar, . . . 1869
Prescott, Albert B., M.D., . 1871

Battle Creek.

Wardell, Robert C., . . 1860

Bay City.

Street, Job F., . . . 1869

Chelsea.

Glazier, George P., . . 1863

Detroit.

Chapman, Joseph R., . . 1869
Duffield, Samuel P., Ph.D., . 1859
Fletcher, Francis E., . . 1866
Griffith, John H., . . . 1866
Johnston, William, . . 1860
Ronnefeld, Theodore, . . 1866
Vernon, James, . . . 1866

East Saginaw.

Dunk, Alfred A., . . . 1867
Garrigues, Samuel S., Ph.D., 1855
Melchers, Henry, . . . 1869
Simoneau, Leander, . . 1869

Jackson.

Holland, James M., . . 1866
Meseroll, James C., . . 1867
Weeks, Eugene J., . . . 1866

Monroe.

Weiss, Julius, ... 1866

Muskegon.

Wagener, Samuel H., . 1869

Saginaw City.

Moll, William, . . . 1869

Schoolcraft.

James, George R., . . . 1869

MINNESOTA.

Duluth.

Eyster, C. Edward, . . . 1871

Mankato.

Austin, George W., . . 1865

Minneapolis.

Savory, George Augustus, . 1869
Shuey, William H., . . 1864

St. Paul.

Stein, Gottlieb, . . . 1871
Sweeney, Robert Ormsby, . 1866

St. Peter.

Reigart, John Musser, . . 1871

MISSISSIPPI.

Columbus.

Osborne, Hampden, . . 1869

Jackson.

Ash, Matthew F., . . . 1856
Buck, John T., . . . 1868

MISSOURI.

St. Louis.

Alexander, Maurice W., . 1871
Bang, Charles, . . . 1871
Blake, Amos R., . . . 1871
Blank, Alois, ... 1871
Blickhahn, George F., M.D., 1871
Boehm, Solomon, . . . 1871
Bugge, Andreas Valdemar, . 1868
Catlin, Ephron, . . . 1871
Catlin, Theron, . . . 1871
Chamberlain, Guilford T., . 1853
Connor, James F., . . . 1871
Crawford, William Harper, . 1864
Crawley, Francis Xavier, . 1869
Curtman, Charles O., M.D., . 1871
D'Amour, Otto, . . . 1871
Fischer, C. F. Adolph, . . 1871

Glenn, Thomas Smith, . . 1870
Grandjean, Charles, . . 1871
Grandjean, Eugene, . . 1871
Graus, William R.,. . . 1871
Guerdan, John, . . . 1871
Harless, Adolphus, . . . 1871
Hollister, Arthur P., . . 1871
Jones, Charles Kamdall, . 1867
Jones, Isaac E., . . . 1858
Kalb, Theodore, . . . 1864
Kirkbride, Joseph Cooper, . 1869
Kovacs, Martin, . . . 1871
Krebs, Hugo, ... 1871
Leitch, Arthur, . . . 1860
Maddock, William L., . . 1871
Mallinckrodt, Gustavus, . . 1869
Mallinckrodt, Edward, . . 1869
Metzger, John F., . . . 1871
McBride, James, . . . 1864
Meyer, Christian F. G., . . 1860
O'Gallagher, James, M.D., . 1858
Physick, Henry Sanford, . 1870
Primm, Hubert, . . . 1855
Randals, Evermont, . . 1865
Rano, Charles O., . . . 1866
Richardson, J. Clifford, . . 1871
Sander, Enno, Ph.D., . . 1858
Schaeffer, Henry W., . . 1863
Scholz, Philip, . . . 1871
Schultz, Frederick William, . 1871
Sennewald, Ferdinand William, 1865
Steer, Justin, ... 1869
Tanton, Thomas, . . . 1865
Ude, George, ... 1871
Witte, L. Edward, . . . 1871

Chillicothe.

Boyce, S. F., ... 1871

Hannibal.

Orynski, L., ... 1871

Kansas City.

Brackett, Aurick S., . . 1868
Breunert, Augustus, . . 1868
Lyon, George P., . . . 1871
Mann, Albert H., . . . 1869

Macon.

Field, Amos, ... 1871

Mexico, Adrian Co.

Llewellyn, John Frederick, . 1867

St. Charles.

Allison, James W., . . 1871

Trenton, Grundy Co.

Fetherston, Edward R., . . 1871

Weston.

Parr, John C., . . . 1856

NEBRASKA.

Omaha.

Goodman, Charles F., . . 1871

NEVADA.

Aurora.

Baldwin, Charles Edgar, . 1871
Green, Alexander Alfred, . 1868

NEW HAMPSHIRE.

Concord.

Morgan, James, . . . 1859

Dover.

Tufts, Charles Augustus, M.D., 1856

Exeter.

Merrill, Charles A., . . 1858

Keene.

Dort, Oliver Gilman, . . 1858
Muchmore, William Fletcher, 1868

Manchester.

Littlefield, Chauncey B., . 1868

New Market.

Dearborn, George L., . . 1853

Portsmouth.

Thacher, Joseph Haven, . . 1859
Whipple, Napoleon Dana, . 1871

Somersworth.

Jones, Charles Mortimer, . 1869
Moore, George, . . . 1859

NEW JERSEY.

Bordentown.

Hankins, Bunting, . . . 1865

Burlington.

Allinson, William J., . . 1862
Vandegrift, John A., . . 1867

Camden.

Brown, Albert P., . . . 1870
De la Cour, Joseph L., . . 1870
Test, Alfred W., . . . 1870

Elizabeth.

Barnaby, Thomas J., . . 1870

Elizabethport.

Frohwein, Richard, . . 1867

Englewood.

Morris, P. H., ... 1871

Hoboken.

Fehr, Julius, ... 1870

Jersey City.

Abernethy, Maxwell, . . 1865
Covell, Thomas Jefferson, . 1864
De Motte, Henry A., . . 1871
Kirsten, Adolph, . . . 1867
Laird, William R., . . 1867
McKechnie, William W., . 1868
Mercein, James R., . . 1865
Phillips, George W. C., . . 1871
White, George H., . . . 1868

Morristown.

Dalrymple, Charles H., . . 1860
Voorhees, William S., . . 1868

Mount Holly.

White, Aaron Smith, . . 1860

Newark.

Badger, Charles W., . . 1870
Dreher, Ernest, . . . 1869
Havenstein, Alexander, . . 1870
Jacques, Isaac W., . . . 1869
Kelley, Edward F., . . 1870
Lee, John B., ... 1870
Littell, William M., . . . 1870
Nichols, Edward P., M.D., . 1870
Peters, Alexander C., . . 1868
Smith, Charles B., . . . 1868
Vandervoord, Ransford W., . 1870
Van Gieson, Theron W., . 1869
Van Winkle, Abraham, . . 1871

New Brunswick.

Rust, William, ... 1870

Plainfield.

Voorhees, William H., . . 1868

South Amboy.

Jacques, George W., . . 1869

Trenton.

Rickey, Randal, . . . 1870

Vincentown.

Heisler, Jacob, ... 1868

NEW MEXICO.

Santa Fé.

Krummeck, Jacob, . . . 1867

NEW YORK.

New York City.

Aspinwall, James S., . . 1855
Balluff, Paul, ... 1860
Bates, Louis A., . . . 1869
Bedford, Peter Wendover, . 1859
Billings, Henry M., . . 1869
Brewer, William A., . . 1853
Carle, John, Jr., . . . 1860
Cassebeer, Henry A., . . 1858
Chandler, Charles F., Ph.D., . 1867
Coddington, Isaac, . . . 1855
Colby, Ferris W., . . . 1865
Currie, John H., . . . 1858
Davis, Benjamin, . . . 1869
Dege, George F., . . . 1868
Ditman, Andrew J., . . 1868
De la Vergne, George W., . 1857
Dunn, Adolph G., . . . 1862
Faber, John, ... 1857
Fisher, William, . . . 1862
Frey, John, ... 1865
Fougera, Edmund C., . . 1867

Frohwein, Max, . . . 1865
Frohwein, Theobald, . . 1862
Gardiner, Warren B., . . 1860
Gilmore, John W., . . 1867
Gellatly, William A., . . 1858
Giles, William M., . . . 1860
Goecke, Augustus Gottfried, . 1867
Green, Thomas T., . . 1858
Gridley, Junius, . . . 1853
Hale, Frederick, . . . 1855
Harner, James M., . . 1867
Haviland, Henry, . . . 1857
Hays, David, ... 1867
Hebberling, Gottfried, . . 1867
Hegeman, William, . . 1858
Higgins, James S., . . . 1862
Hoffmann, Frederick, Ph.D., 1867
Hohenthal, Charles F. L., . 1865
Hudnut, Alexander, . . 1857
Johnson, Edward L., . . 1860
Kiersted, Henry, . . . 1858
Kiersted, Henry T., . . 1856
Kimmel, Henry, . . . 1867
Krehbiel, Gustavus, . . 1865
Lazell, Lewis T., . . . 1858
Macmahan, Thomas Jackson, 1871
Marsh, Edward H., . . 1858
Mason, Alfred, . . . 1865
McKesson, John, Jr., . . 1867
Milhau, Edward L., . . 1858
Milhau, John, . . . 1855
Molwitz, Ernest, . . . 1867
Neergaard, William, . . 1859
Onderdonk, William H. C., . 1867
Osmun, Charles A., . . 1868
Peixotto, Moses L. M., . . 1869
Porter, George G, . . . 1860
Ramsperger, Gustavus, . . 1860
Reichard, F. Alfred, . . 1871
Reinold, Bernard H., . . 1861
Rice, Charles, ... 1870
Rice, Lucian M., . . . 1866
Robbins, Daniel C., . . 1862
Sands, Robert A., . . . 1858
Sands, George G., . . . 1867
Schofield, James L, . . 1867
Shedden, John W., . . 1859
Sheils, George E., . . . 1860
Skelley, James T., . . . 1866
Southwick, George W., . . 1860
Starr, Thomas, . . . 1870
Weaver, James, . . . 1860
Weismann, Augustus W., . 1869
Wenck, George J., . . 1869
Westerfield, Joseph H., . . 1858
Wheeler, Lucian F., . . 1858
Wickham, William Hull, . 1870
Wright, George, . . . 1869
Wright, William, Jr., . . 1859

Brooklyn.

Barnaby, James Otis, . . 1870
Bassett, Francis M., . . 1860
Baylis, William E. P., . . 1860
Close, George C., . . . 1858
Creuse, Jules L. A., . . 1871
Curtiss, Charles Grenville, . 1866
Davies, Robert J., . . . 1858
Day, Carlos E., . . . 1870
Dunn, John A., . . . 1867
Dupuy, Eugene, . . . 1852
Goodman, Bernard, . . 1867
Heydenreich, Emil, . . 1867
Heydenreich, F. Victor, . . 1860
Jones, Thomas, . . . 1868
Kitchen, Charles W., . . 1865
Lewis, Thomas, . . . 1867
Metcalf, Tristram W., . . 1857
Newman, George A., . . 1865
Niebrugge, John H., . . 1861
Ollif, James H., . . . 1867
Owens, Richard J., . . . 1860
Peduzzi, George S., . . 1861
Pyle, Cyrus, ... 1859
Rhodes, Robert R., M.D., . 1865
Sheets, James Addison, . . 1870
Snyder, Ambrose C., . . 1867
Squibb, Edward R., M.D., . 1858
Tartiss, Alfred J., . . . 1867
Vincent, William, . . . 1870
Watson, William J., . . 1860
Wynn, William, . . . 1867

Albany.

Cutler, John W., . . . 1870
McMurdy, Robert S., M.D., . 1861

Buffalo.

Peabody, William H., . . 1857
Tibbs, William H., . . 1871

Elmira.

Morse, Henry C., . . . 1868

Fishkill, on Hudson.

Moith, Augustus Theodore, . 1860

Flushing.

Contant, James L., . . 1868

Greenpoint.

Tapken, Theodore, . . . 1868

Lockport.

Ruete, Theodore W., . . 1870

Middletown.

King, James T., . . . 1859
Rogers, William H., . . 1869

New Lebanon.

Bennett, William R., . . 1871
Tilden, Henry A., . . . 1858

Plattsburgh.

Cady, Hiram Walworth, . 1870

Potsdam.

Thatcher, Hervey D., . . 1865

Poughkeepsie.

Sherwood, Hezekiah S., . . 1870

Rochester.

Lane, Alfred S., . . . 1857

Rondout.

Laycock, Washington, . . 1857

Sag Harbor.

Lobstein, J. F. Daniel, . . 1868

Saratoga Springs.

Fish, Charles F., . . . 1866
Fish, George H., . . . 1869

Troy.

Drake, Robert S., . . . 1869

West New Brighton, S. I.

McRae, William H., . . 1861

West Farms.

Webb, Henry E., . . . 1865

Yonkers.

Stephens, William G., . . 1860
Toplis, Robert J., . . . 1863

NORTH CAROLINA.

Chapel Hill.

Saunders, Richard B., . . 1858

Raleigh.

Menninger, Henry J., M.D., . 1866

Washington.

Gallagher, Charles K., . . 1857

OHIO.

Cincinnati.

Adderly, William H., . . 1854
Arons, William C., . . 1854
Berghausen, Edward, . . 1864
Chapman, William B., . . 1852
Eger, George, ... 1864
Fennel, Adolphus, . . . 1864
Foertmyer, Adolphus W., . 1864
Foertmyer, Charles, . . 1864
Fratz, John G., . . . 1864
Gordon, Oliver F., . . . 1857
Gordon, William J. M., . 1854
Greve, Theodore L. A., . . 1864
Heineman, Otto, . . . 1864
Helman, Charles M., . . 1864
Henkel, Augustus, . . . 1865
Hill, Alfred C., . . . 1864
Hill, Hiram H., . . . 1864
Hottendorf, Augustus, . . 1864
Judge, John F., . . . 1866
Karrmann, William, . . 1864
Keeshan, John, . . . 1864
Lloyd, John Uri, . . . 1870
Markward, James, . . . 1864
Merrell, William S., . . 1854
Miller, Robert T., . . . 1869
Odena, Frederick M., . . 1866
Reinlein, Paul, . . . 1856
Reum, Hermann F., . . 1864
Scott, John, ... 1854

Taylor, James E., . . . 1869
Tully, Andrew J., . . . 1862
Wayne, Edward S., . . 1854
Wells, Jacob David, . . 1864
Yorston, Matthew M., . . 1864

Alliance.

Barr, Peter H., . . . 1867

Canton.

Geiger, Conrad John, . . 1866
Geiger, Walter P., . . . 1867

Circleville.

Fickardt, George H., . . 1864

Cleveland.

Gaylord, Henry C., . . 1869
Merkel Louis J., . . . 1871

Columbus.

Ritson, Alfred, . . . 1870

Dayton.

Crawford, John S., . . . 1868
Dietrich, Jacob W , . . 1856

Dresden.

Dorsey, Thomas B., . . 1866

Findlay.

Poorman, Samuel F., . . 1869

Logan.

Harrington, Frank, . . 1869

Navarre.

Garver, Alexander, . . 1866
Grossklaus, John F., . . 1859

Salem, Columbiana Co.

Hawkins, M. Smith, . . 1870

Springfield.

Casper, Thomas J., M.D., . 1867

Toledo.

Daniels, Thomas, . . . 1866

Utica.

Boyd, Abraham, . . . 1869

Wooster.

Ohliger, Lewis P., . . . 1871

Xenia.

Allen, Alexander B., . . 1869

Youngstown.

Neal, Leander, . . . 1858

Zanesville.

Cary, Edward R., . . . 1871

OREGON.

Portland.

Hodge, Charles, . . . 1859

PENNSYLVANIA.

Philadelphia.

Abell, Walter B., . . . 1867
Angney, John R., . . . 1867
Archibald, Henry C., . . 1867
Bakes, William C., . . 1864
Bauer, Louis G., . . . 1867
Bispham, James L., . . 1865
Blair, Andrew, . . . 1865
Blair, Henry C., . . . 1868
Blinkhorn, George, . . 1860
Boring, Edwin McC., . . 1867
Bower, Henry, . . . 1860
Bower, Henry A., . . . 1868
Bowman, Henry K., . . 1869
Bullock, Charles, . . . 1857
Bunting, Samuel S., . . 1857
Caldwell, James Marshall, . 1866
Campbell, Samuel, . . . 1864
Carberry, P. Joseph L., . . 1870
Chapman, Samuel, M.D., . 1857
Coombe, Thomas R., . . 1860
Cramer, Henry, . . . 1867
Crew, J. Lewis, . . . 1860
Dobbins, Edward T., . . 1867
Eberle, Charles L., . . 1865
Eddy, Henry C., . . . 1869
Eldridge, George W., . . 1865
Ellis, Charles, . . . 1852
Ellis, Evan T., . . . 1857
England, Robert, . . . 1868
Erben, John S., . . . 1868

Evans, William, Jr., . . 1860
Everhart, Augustus, . . 1867
Everson, John C., . . . 1863
Fox, Peter P., . . . 1869
Grahame, Israel J., Phar.D., . 1856
Grove, John E., . . . 1868
Haenchen, Charles Eugene, . 1865
Hance, Edward H., . . 1857
Hancock, Charles W., . . 1868
Hassard, Peter J., . . . 1853
Heintzelman, Joseph A., . 1858
Hubbell, Orange Scott, . . 1857
Huddart, John F., . . . 1870
Hurst, John C., . . . 1868
Jefferson, Charles L., . . 1869
Jenks, William J., . . 1858
Johnson, Benjamin F., . . 1859
Jones, Daniel S., . . . 1859
Jones, Edward C., . . . 1864
Jones, Samuel T., . . . 1867
Kay, Isaac W., . . . 1870
Keeney, Caleb R., . . . 1868
Keys, Roger, ... 1868
Krause, William, . . . 1870
Lancaster, Thomas A., . . 1859
Lippincott, Henry B, . . 1868
Maisch, John M., Phar.D., . 1856
McCollin, Samuel Mason, . 1864
McIntyre, William, . . 1868
Mellor, Alfred, . . . 1864
Miller, Adolphus W., M.D, . 1868
Milligan, Decatur, . . . 1867
Moore, Joachim Bonaparte, . 1860
Needles, Caleb H., . . . 1868
Parrish, Clemmons, . . 1868
Parrish, Dillwyn, . . . 1857
Parrish, Edward, . . . 1852
Peck, Henry T., . . . 1868
Perot, E. Raphael, . . . 1858
Perot, T. Morris, . . . 1857
Pile, Wilson H., M.D., . . 1857
Platzer, Robert, . . . 1865
Preston, David, . . . 1868
Procter, William, Jr., Phar.D., 1853
Raser, William H., . . 1869
Reed, Philemon S., . . 1870
Remington, Joseph P., . . 1867
Riley, Charles W., . . . 1868
Rittenhouse, Henry N., . . 1857
Robbins, Alonzo, . . . 1865
Roche, Edward M., . . 1868
Roche, William F., . . 1868
Rosengarten, Mitchell G., . 1869
Scattergood, George J., . . 1860
Seeger, Roland, . . . 1868
Selfridge, Matthew M., . . 1858
Shivers, Charles, . . . 1860
Shinn, James T., . . . 1860
Shoemaker, George Y., . . 1862
Shoemaker, Joseph L., . . 1867
Shoemaker, Richard M., . 1869
Shryock, Allen, . . . 1868
Simes, J. Henry C., M.D., . 1865
Smith, Isaac W., . . . 1867
Snowdon, George M., . . 1857
Souder, Joseph A., . . 1870
Taylor, Alfred B., . . . 1852
Thompson, William B, . . 1858
Tilge, Frederick A., . . 1868
Trinder, William, . . . 1870
Troth, Samuel F., . . . 1857
Van Orsdel, William E., . 1868
Vogelbach, Hermann A., . 1868
Warner, William R., . . 1857
Weaver, J. Thornton, . . 1868
Webb, William H., M.D., . 1867
Weidemann, Charles A., . 1868
Wiegand, Thomas S., . . 1857
Wilder, Hans M., . . . 1866
Wilson, Adam H., . . . 1859
Wright, Archibald W., . . 1868

Ashland.

Delker, Frederick J., . . 1868

Bellefonte.

Green, Francis P., . . . 1864

Bethlehem.

Borhek, James T., Jr., . . 1867
Eggert, Charles H., . . 1857
Luckenbach, Edward H., . 1870
Meyers, Edward T., . . 1867
Rau, Eugene A., . . . 1870

Chambersburg.

Cressler, Charles H., . . 1868
Heyser, William, Jr., . . 1856

Columbia.

Meyers, James A., . . . 1867

Danville.

Von Nieda, John W., . . . 1868

Easton.

Purdon, West Newton, . . 1871

Erie.

Nick, Hermann Charles, . 1869
Nick, William Frederick, Jr., 1869

Harrisburg.

Egle, William H., M.D., . 1870

Lancaster.

Heinitsh, Charles A., . . 1857
Hubley, Alfred A., . . 1870

Lebanon.

Lemberger, Joseph L., . . 1858

Mansfield, Allegheny Co.

Christy, Robert, . . . 1871

Muncy, Lycoming Co.

Evans, Clarence A., . . 1870

Oil City.

Griffith, Albert R., . . 1870

Phillipsburg.

England, Howard, . . . 1868

Pittsburg.

Abel, Joseph, ... 1864
Cherry, James B., . . . 1868
Hostetter, Charles M., . . 1870
Mattern, John C., . . . 1860
Ottinger, Franklin, . . 1871
Rankin, Alfred J., . . . 1864

Pottstown.

Cunningham, John M., . . 1867

Pottsville.

Kennedy, George W., . . 1869
Latham, Edward, . . . 1871

Quakertown.

Penrose, Stephen F., . . 1871

Reading.

Stein, Jacob H., . . . 1869
Ziegler, Philip Milton, . . 1867

South Bethlehem.

Sieger, William S., . . 1867

Towanda.

Porter, Henry C., . . . 1869

Wilkesbarre.

Tener, Richard, Jr., . . 1863

Williamsport.

Duble, Jesse Balderston, . . 1870

RHODE ISLAND.

East Greenwich.

Congdon, Albert J., . . 1860

Newport.

Blackman, Lyman R., . . 1865

Providence.

Calder, Albert L., . . . 1859

Westerley.

Lattimer, Robert F., . . 1857

SOUTH CAROLINA.

Columbia.

Heinitsh, Edward H., . . 1867
Silliman, Lewis T., . . 1859

TENNESSEE.

Bolivar.

Larwill, Joseph H., Jr., . . 1858

Memphis.

Carson, Edwin J., . . . 1871
Hampson, Hugh H., . . 1869

Hoerner, Theodore, . . 1871
Johnston, Charles P, . . 1868
Jones, George H, . . . 1869
Robinson, James S., . . 1869
Steel, Frank L., . . . 1870
Steever, Henry C., . . . 1865
Uhl Charles F., . . . 1866

Nashville.

Lillard, Benjamin, . . . 1869

TEXAS.

Galveston.

Kellam, Stewart, ... 1871

UTAH.

Salt Lake City.

Perkins, William Alexander, 1869

VERMONT.

Brandon.

Cheney, Judson Rollin, . . 1868

Rutland.

Higgins, Albert H., . . 1870
Lewis, Elam C., . . . 1870

VIRGINIA.

Alexandria.

Stabler, Richard H., M.D., . 1856

Fredericksburg.

Hall, Marshall C., . . . 1870

Richmond.

Hazard, Thomas H., . . 1870
Howard, Thomas A., . . 1871
Nolting, Adolphus W., . . 1870

WISCONSIN.

Beloit.

Collins, Charles Frederick Gove, 1859

Fond du Lac.

Curran, Edward S., . . 1869

Green Bay.

Cherot, Leonce, . . . 1865

Maxomanie.

Senier, Alfred, . . . 1869

Milwaukie.

Drake, John R., . . . 1860

Prairie du Chien.

Wright, Edward M., . . 1869

Tomah.

Griggs, Osmon J., . . . 1869

DOMINION OF CANADA.

QUEBEC.

Montreal.

Edwards, John Baker, . . 1868
Gray, Henry R., . . . 1867
Mercer, Nathan, . . . 1867
Nelson, Wolfred D. E., . . 1870

ONTARIO.

Bradford.

Morgan, George Webster, Jr., 1867

Guelph.

Petrie, Alexander Bain, . . 1867

Hamilton.

Lawrence, Thomas, . . 1867

London.

Moore, William Maurice, . 1866
Saunders, William, . . 1860

Stratford.

Waugh, George W., . . 1862

WEST INDIES.

BERMUDA.

Hamilton.

Heyl, James B., . . . 1863

CUBA.

Cardenas.

Cahill, John F., . . . 1870

U. S. OF COLOMBIA.

Panama.

Herbruger, Florence C., . . . 1867

NICARAGUA.

Granada.

Guzman, Horace, . . 1871

LIST OF DECEASED MEMBERS.

HONORARY MEMBERS.

		Elected.	Died.
Bache, Franklin, M.D.,	Philadelphia, Pa.,	1857,	1864
Boullay, Pierre François Guillaume,	Paris, France,	1868,	1869
Farrington, Thomas,	Boston, Mass.,	1856,	1867
Robinet, Stephane,	Paris, France,	1868,	1869

ACTIVE MEMBERS.

		Elected.	Died.
Anderson, James H.,	New York, N. Y.,	1859,	1866
Bache, Charles L.,	San Francisco, Cal,	1852,	1854
Backus, James W.,	Marine City, Mich.,	1867,	1870
Balmer, James,	Baltimore, Md.,	1856,	1866
Barry, John W.,	Baltimore, Md.,	1856,	1861
Baynon, John,	Shrevesport, La.,	1858,	1862
Benzinger, John Sylvester,	Baltimore, Md.,	1860,	1869
Bigelow, Francis O.,	Medford, Mass.,	1859,	1863
Billings, Samuel J.,	New York, N. Y.,	1860,	1865
Bingham, John C.,	St. Johnsbury, Vt.,	1853,	1870
Blair, Henry C.,	Philadelphia, Pa.,	1855,	1862
Blauw, Hippolytus A.,	Rochester, N. Y.,	1856,	1870
Bringhurst, Ferris,	Wilmington, Del.,	1862,	1871
Brown, John T.,	Boston, Mass.,	1859,	1860
Canavan, Benjamin,	New York, N. Y.,	1855,	1857
Carney, Charles Tibbetts,	Boston, Mass.,	1853,	1862
Caspari, Charles,	Baltimore, Md.,	1856,	1870
Churchill, George W.,	Chelsea, Mass.,	1865,	1869
Clency, William F.,	Cincinnati, O.,	1859,	1865
Colby, Moses D.,	Boston, Mass.,	1859,	1870
Coon, Walter S.,	New York, N. Y.,	1858,	1861
Coppuck, Peter V.,	Mount Holly, N. J.,	1857,	1869
Cressman, Noah,	Waterloo, Canada, Ont.,	1863,	1864
Cunningham, James E.,	Pittsburg, Pa.,	1860,	1863
Cushman, Alexander,	New York, N. Y.,	1858,	1861
D'Evers, Henry Gaston,	Chicago, Ill.,	1865,	1870
Dodge, John P.,	New York, N. Y.,	1855,	1863
Easterbrook, Ray B.,	New York, N. Y.,	1858,	1868

		Elected.	Died.
Emanuel, Louis M., M.D.,	Linwood, Pa.,	1857,	1868
Fish, George B.,	Saratoga Springs, N. Y.,	1860,	1866
Fish, Henry F.,	New York, N. Y.,	1852,	1868
Forester, Richard,	Brooklyn, N. Y.,	1860,	1862
Gabaudan, Arthur W.,	New York, N. Y.,	1862,	1870
Gay, William,	Cambridgeport, Mass.,	1858,	1862
Gerhard, John C.,	Cincinnati, O.,	1862,	1866
Geyer, Andrew,	Boston, Mass.,	1853,	1855
Groneweg, Louis,	Cincinnati, O.,	1864,	1866
Harbaugh, Valentine,	Washington, D. C.,	1856,	1871
Hegeman, Frederick Augustus,	New York, N. Y.,	1855,	1860
Hendel, Samuel D.,	St. Louis, Mo.,	1858,	1871
Hill, Henry E.,	Detroit, Mich.,	1866,	1868
Jardella, Jerome B.,	Vincennes, Ind.,	1865,	1870
Jenkins, William Ellis,	Boston, Mass.,	1865,	1869
John, Frederick L.,	Philadelphia, Pa.,	1856,	1864
Junghanns, Charles A.,	Cincinnati, O.,	1858,	1862
Kennedy, Robert C.,	Cleveland, O.,	1865,	1868
Kent, Ashbury,	Cincinnati, O.,	1854,	1860
Kent, William,	Cincinnati, O.,	1864,	1867
King, Henry,	New York, N. Y.,	1858,	1867
Knapp, Edwin E.,	Norwalk, Conn.,	1860,	1862
Laidley, Joseph,	Richmond, Va.,	1852,	1861
Lane, James B.,	Fitchburg, Mass.,	1856,	1867
Leitch, Alexander,	St. Louis, Mo.,	1858,	1868
Leuschner, Otto,	Detroit, Mich.,	1857,	1868
Little, William B.,	Panama, U. S. Colombia,	1857,	1867
Longshaw, William, Jr., M.D.,	Bayou Sara, La.,	1858,	1864
Lyon, Charles H., Jr.,	Boston, Mass.,	1858,	1871
McDonald, John,	Brooklyn, N. Y.,	1860,	1861
McIntyre, Timothy C., M.D.,	Washington, D. C.,	1858,	1862
McPherson, George B.,	Cincinnati, O.,	1867,	1871
Massot, Eugene L.,	St Louis, Mo.,	1857,	1871
Maxwell, James T.,	New York, N. Y.,	1855,	1860
Mayer, Ferdinand F.,	New York, N. Y.,	1859,	1869
Meakim, John (Pres. 1855–56),	New York, N. Y.,	1852,	1863
Muller, William H.,	Chicago, Ill.,	1865,	1870
Nagle, John G.,	Baltimore, Md.,	1863,	1869
Nadand, James W.,	Cincinnati, O.,	1864,	1868
Norgrave, Samuel K.,	Pittsburg, Pa.,	1857,	1871
Olliffe, William J., M.D.,	New York, N. Y.,	1858,	1866
Osgood, Samuel W.,	Davenport, Iowa,	1858,	1860
Palmer, Albert G.,	Washington, D. C.,	1858,	1860
Parker, Herschel,	Brooklyn, N. Y.,	1867,	1870
Peck, Samuel P.,	Bennington, Vt.,	1853,	1859
Philbrick, Samuel R.,	Boston, Mass.,	1852,	1859

		Elected.	Died.
Phillips, Llewellyn,	Baltimore, Md.,	1856,	1865
Polhemus, James L.,	Sacramento, Cal.,	1866,	1867
Pollard, Charles P.,	Marysville, Cal.,	1859,	1869
Pyle, J. Lindley,	Brooklyn, N. Y.,	1859,	1866
Rehfuss, Lewis,	Cincinnati, O.,	1854,	1856
Roberts, David,	Boston, Mass.,	1858,	1863
Rollman, Frederick,	Philadelphia, Pa.,	1862,	1864
Roemer, Daniel,	Cincinnati, O.,	1865,	1870
Sands, Jesse M.,	New York, N. Y.,	1860,	1867
Scully, Harmar D.,	Pittsburg, Pa.,	1858,	1866
Smith, Charles Augustus,	Cincinnati, O.,	1852,	1862
Smith, Edwin R.,	Monmouth, Ill,	1862,	1869
Squire, William H.,	Germantown, Pa.,	1862,	1865
Steiner, Henry,	Philadelphia, Pa.,	1857,	1858
Stevens, Ashbel Mead,	Cincinnati, O.,	1854,	1860
Stevens, Rufus Walker,	Somersworth, N. H.,	1859,	1868
Sweetser, Thomas Augustus,	South Danvers, Mass.,	1859,	1860
Taylor, Robert J.,	Newport, R. I.,	1859,	1871
Taylor, William,	Philadelphia, Pa ,	1868,	1871
Thomas, William,	Jersey City, N. J.,	1855,	1856
Waite, Samuel B.,	Washington, D. C.,	1858,	1862
Warren, William,	Brighton, Mass.,	1867,	1871
Weyman, George W., Ph.D.,	Pittsburg, Pa.,	1858,	1864
White, Daniel F.,	Charlestown, Mass.,	1859,	1864
White, William P.,	Chicago, Ill.,	1865,	1866
Whitehead, Silas,	Lynchburg, Va.,	1856,	1858
Wilson, George C.,	Boston, Mass.,	1859,	1861
Wiseman, Charles,	Baltimore, Md.,	1856,	1862
Witzell, L.,	Cincinnati, O.,	1864,	1867
Wood, G. Davidge,	Baltimore, Md.,	1856,	1863
Woods, Samuel H.,	Boston, Mass.,	1859,	1869

LIST OF RESIGNATIONS.

Names.	Residence.	Elected.
Bixby, Charles C.,‡	North Bridgewater, Mass.,	1859
Blake, Alexander V.,†	New York, N. Y.,	1860
Block, John,ℨ	Baltimore, Md.,	1860
Champlin, Erastus N.,*	Albany, N. Y.,	1864
Coggeshall, George D.,*	New York, N. Y.,	1852
Cooke, James,ℨ	Fredericksburg, Va.,	1856
Ehlers, John N.,†	Auburn, Ind.,	1867

* Left the business. † No reason given. ‡ Inability to attend the meetings.
ℨ Ill health.

Names.	Residence.	Elected.
Elliott, William,§	Baltimore, Md.,	1868
Fletcher, Norman,*	Louisville, Ky.,	1867
Hooker, John,†	Springfield, Mass.,	1867
Krim, John M.,†	Louisville, Ky.,	1867
Mann, Emanuel,*	Ann Arbor, Mich.,	1866
McDaniel, James E.,§	Baltimore, Md.,	1860
Musgiller, Frederick C.,*	Hudson City, New York,	1867
Raser, John H.,‡	Reading, Pa.,	1867
Shoemaker, Charles,†	Wilmington, Del.,	1867
Smith, Ambrose,*	Philadelphia, Pa.,	1859
Thompson, Robert, M.D.,†	Bloomington, Ill.,	1860
Whitney, William,†	New York, N. Y.,	1867

LIST OF MEMBERS DROPPED FROM THE ROLL.

Names.	Residence.	Elected.
Ashton, George H.,	Philadelphia, Pa.,	1864
Atkinson, William D.,	Boston, Mass.,	1865
Biddle, Hiram S.,	New York, N. Y.,	1869
Birch, John,	Pittsburg, Pa.,	1869
Burt, Theodore F.,	New York, N. Y.,	1868
Butterworth, John,	Unknown,	1860
Colby, Ferris W.,	Unknown,	1865
Conway, John F.,	Unknown,	1862
De la Vergne, George W.,	New York, N. Y.,	1857
Dunn, Adolphus G.,	New York, N. Y.,	1862
Earle, Sylvester Monteith,	Hackensack, N. J.,	1864
Forgey, Alfred V.,	New Orleans, La.,	1865
Frost, Josiah B.,	Ypsilanti, Mich.,	1866
Hayes, Benjamin E.,	New York, N. Y.,	1866
Hedenberg, James M.,	Danville, Pa.,	1870
Lampanius, Charles A.,	Unknown,	1867
L'Hommedieu, Charles L.,	Unknown,	1866
Percival, George G.,	Waterville, Me.,	1868
Preuss, Edward A.,	Unknown,	1866
Smith, Thomas E.,	Leavenworth, Kansas,	1869
Simmons, Francis W.,	Unknown,	1865
Stuart, George A.,	Boston, Mass.,	1867
Stirling, Charles N.,	Unknown,	1867
Warren, Henry,	New York, N. Y.,	1859
Whittemore, Eugene,	Boston, Mass.,	1865
Wilson, Richard E.,	Kansas City, Mo.,	1869
Welling, Samuel G.,	New Rochelle, N. Y.,	1860

* Left the business. † No reason given. ‡ Inability to attend the meetings.
§ Ill health.

INDEX.

Acacia catechu, 272
vera, 274
Achillea moschata, 285
Achilleina, 285
Acid acetic, impure, 220, 339
ailanthic, 270
angelicic transformed into valerianic acid, 221
atractylic, 285
benzoic in benzoin, and synthesis, 221
butyric in glycerin, 255
carbolic, cerate, 152
in oil of cloves, 155
in pills, 157
in powder form, 158
preparations of, 166
test for, 251
chloric, test for, 184
citric, market supply of, 396
new source of, 220
syrup of, 160
test for, 220
cryptophanic in urine, 235
cyclopic, 308
hydriodic, spec. grav. of, 188
hydrobromic, preparation of, 185
hydrochloric, bromine in, 184
hydrocyanic, generation of, 182
muriatic, impure, 340
nitric, preparation and tests, 180
reduction of, 179, 180
ophelic, 287
oxalic, decomposition of, 181, 182
phosphoric, preparation of, 195
phosphorous, detection of, 195
propionic, new source of, 221
pyrogallic, new color from, 222
regianic, 293
silico-propionic, 196
sulphophenic, 550
sulphuric, apparatus for distilling, 139
aromatic, 148, 444
impure, 340
preparation of, 194
sulphurous, alcoholic solution, 193
tannic and glycerin in pencil form, 167
preparations of, 221
purification from resin, 222
Acid tartaric, adulterated, 340
market supply of, 394
phosphorescent, 220
prevention of mould in solutions of, 220
valerianic from angelicic acid, 221
Acids, organic, 220
saturation tables for, 140
test for in fatty oils, 154
Aconitum, alkaloids of genus, 228
Acridina, a new base, 232
Address of North German Apothecaries' Society, 77
Adulterations, discussion on, 59
Ailanthus excelsa, 270
Albumen from blood, 238
soluble, 237
tests for, 237
Alcohol, action of chlorine on, 242
allylic, 250
from lichens, beet root, &c., 241
methylic, test for acetone, &c., in, 242
Aldehydina, identical with collodina, 231
Alismaceæ, 307
Alizapurpurine, 223
Alizarine, artificial, 284
Alkalies, delicate test for, 141
detection of free, in soap, 159
Alkaloids, electrolysis of, 223
of aconite, 228
of boraginaceæ, 289
of cinchona, 229
of opium, 224
of solanaceæ, 229, 289
of strychnos, 226
of umbelliferæ, 228
volatile, 231, 224
Alkanet paper, 141
Almonds, emulsion of, 149
fixed oil of, 152
Alnus glutinosa, 293
Aloes, trade in, 402
Aloin, decomposition of in alkaline solutions, 144
Alum, impure, 340
Aluminum chloride an antiseptic, 205
hydrate for clarifying, 204
weights, 135
Ammonia, apparatus for making, 518
influence on guaiacum, 200

Ammonia, solvent properties of, 200
water, diluted, 341
Ammonium carbonate, action on sulphates, 201
adulterated, 340
preparation, 200
chloride, impure, 341
gunpowder, 169
salts from gas liquor, 200
Amygdalin in cherry leaves, 257
Amyl nitrite, preparation and properties, 249
Analysis of mineral waters, 141
volumetric, sources of errors, 141
Aniline colors, 222, 223
Anise, adulteration of, 276
Annatto, adulterated, 333
Anthemis nobilis, 285
Anthracene, luting with, 173
Antimony, oxychloride, crystalline, 217
separation from tin and arsenic, 143
sulphuret, golden, 217
impure black, 217, 341
Antozone, 176
Apocynaceæ, 286, 305
alkaloids of, 226
Apomorphia from codeia, 225
Apparatus and processes, 135
filtering, 136
for distilling sulphuric acid, 139
for regulating temperatures, 139
on exhibition, 384
Application for membership, form of, 573
Apprenticeship, pharmaceutical, 418
Aqua rosæ, 143
Araceæ, 307
Araliaceæ, 302
Aristolochiaceæ, 305
Arnica flowers, market of, 397
Arrowroot, Brazilian, 294
adulterated, 341
Arsenic, brightening metallic, 218
reagent for, 218
separation from tin and antimony, 143
Asclepiadaceæ, 305
Asparagus officinalis, 295
Assafœtida, adulterated, 332
market supply of, 403
Atractylis gummifera, 285
Atropia in apparent death, 229
Attfield's saturation tables, 140

Backus, James W., deceased, 38
Bakes, William C., Precautions in Dispensing Poisons, 103, 436
Balsam, Canada, market of, 401
copaiva, adulterated, 273, 334
market of, 398
Peru, 272
Barium carbonate, preparation of, 203
chloride, impure, 203
hydrate, preparation of, 203
Beaumé's hydrometer, 139
Bedford, P. W., Subcarbonate of Iron 102, 528
Beet-root sugar, 259
Belladonna, market supply of, 404
Benzoin, pre-existence of benzoic acid in, 221
supply of market, 403
Benzoinating ointments extempor., 150
Benzole from coal tar, test for, 241
illuminating gas, 240
Berberidaceæ, 299
Betulaceæ, 293, 306
Bile, blue coloring matter in, 234
in urine, test for, 234
Bingham, John C., deceased, 38
Bismuth, metallic, impure, 341
native, 218
subnitrate, adulterated, 341
analysis of, 218
effect of KI upon, 219
Blauw, Hipp. A., deceased, 38
Blistering liquid, 457
Blisters, to camphorate, 151
Boletus laricis, 263
Boraginaceæ, 289, 304
Boron, 195
Brady, Henry B., remarks on extract of meat, 79
suppositories, 83
Brass, electro-deposition on iron, 167
Bringhurst, Ferris, deceased, 38
British Pharmaceutical Conference, letter from President of, 26
Bromal, hydrate, 248, 254
Bromides, preparation of, 186, 187
Bromine, detection of, 189
Cl and I in, 186
production in United States, 185
Bromoform, effects of, 254
Bromo-picrine, 251
Brucia, oxidation of, 227
Buchu leaves, trade in, 404
By-Laws, 566
proposed amendment to, 113

Cactaceæ, 276
Caffeidina, decomposition of, 231
Caffeina, decomposition of, 283. (*See also Theina.*)
Calabar bean, supply of, 60, 402
tincture, 162
Calcium bisulphite, 193
borate, native, 195
carbonate, impure, 344
solubility of, 204
chloride, impure, 343
lactophosphate, syrup of, 161

Calcium sulphate and alkaline salts, 204
Calendula substituted by Tagetes, 334
Calisaya, alkaloids in, 279
California, medical flora of, 297
Calomel, density of vapor, 209
preparation of, 208
Camelliaceæ, 267
Camphor liniment, 148
market of, 400
powdered, 441
Camphorating blisters, 151
Cannabis indica, 291
Cantharidate of potassium in plasters, 164
Cantharides, note on, 457
supply in market, 400
young, inefficiency of, 313
Caoutchouc, artificial, 219
in plasters, 158
Caprifoliaceæ, 277, 302
Capsicum annuum, 289
Carbolic cerate, 152
Carbon, bisulphide, preparation and decomposition, 182, 183
pentasulphide, 184
tetrabromide, 183
solidified, 184
sonorous, 181
Carbonates, alkaline, saturation tables for, 140
Carbonic oxide, preparation of, 181
Cardamom, market of, 399
Carnauba wax, 308
Caryophyllaceæ, 299
Cassia lanceolata, 272
Catechu, adulteration of, 272
Catha edulis, 270
Celastrinaceæ, 270
Cellulose, 260
Cements, 171, 172, 175
Cephaëlis ipecacuanha, cultivation of, 283
Cerasus spec., amygdalin in leaves of, 257
Ceratum acidi carbolici, 152
Chamomile flowers, trade in, 402
Charcoal, animal, preparation of, 181
Chemicals, adulterated, 339
exhibited, 378
Chemistry, inorganic, 176
organic, 220
Chenopodiaceæ, 305
Chiretin, 287
saccharo-, 158
Chloræthylidene, a new anæsthetic, 244
Chloral, 247
alcoholate, tests for, 246, 247
hydrate, adulterated, 343
discussion on, 89
in chemical analysis, 246
liquid preparation of, 89
market supply of, 401
note on, 543
preparation with iodine, 246
purification of, 245
Chlorine, 184
Chlorodyne, 149
Chloroform a test for bile in urine, 234
containing alcohol, 343
decomposition of, 252
generation of, 252
in chloræthylidene, test for, 245
test for, 253
vehicle for, 253
Chlorophyll, 309
Cholesterin in wool, 251
Cimicifuga racemosa, crystalline principle in, 264
Cinchona, ashy crown, 280
assays of, 280–282
adulterated, 333
Calisaya, alkaloids in, 279
culture at Martinique, 280
at St. Helena, 280
in East India, 277
elixirs and tincture of, 162
hybridization of, 279
new alkaloid of, 231, 282
white Payta, 279
Cinchonia substituted for quinia, 230
Cinnabar, native of Borneo, 210
Citrine ointment, 150
Claviceps purpurea, 262
Close, Geo. C., practical notes and observations, 487
Coccogenin, 292
Cochineal, adulterated, 334
testing, 313
Codeia, apomorphia from, 225, 226
Cod-liver oil, Newfoundland, 153
with chloral hydrate, 154
Coffea Arabica, 283
Coffee, fumigating pastilles of, 490
Colcord, Samuel M., pharmaceutical apprenticeship, 96, 418
Collodina identical with aldehydina, 231
Collodion cotton with permanganate, 165
Collodium mercuriale, 262
Cologne water, 163
Colophonine, 271
Committees—
auditing, appointed, 50
report of, 62
business, nominated, 51
executive, nominated, 50
report of, 37
on adulteration, nominated, 51, 52
report of, 59, 330
on arrangements for meeting in 1876, appointed, 77, 95
on credentials, appointed, 24
report of, 28, 46
on decennial index, appointed, 53
report of, 97, 114
on delegation from University of Michigan, appointed, 34
report of, 47
on drug market, nominated, 51
report of, 53, 375

Committees—
on legislation, appointed, 70
report of, 70, 353
on liquor dealers' license of apothecaries, appointed, 69, 87, 99
report of, 86
on nominations, appointed, 37
report of, 50
on papers and queries, nominated, 51
report of, 54
on Pharmaceutical Congress, report of, 70
on pharmacopœia, appointed, 82
on photographic album, 62
on place of meeting, appointed, 70
report of, 96
on progress of pharmacy, nominated, 50
report of, 129
on specimens, appointed, 43
report of, 375
on stamp taxes of apothecaries, appointed, 102
on unofficinal formulas, nominated, 51
report of, 69, 350
Compositæ, 285, 302
Confection of senna, 147
Conia, artificial production of, 228
Coniferæ, 271, 306
Conium maculatum, 276
Constitution, 565
Convolvulaceæ, 287, 305
Convolvulus scammonia, 289
Copper, coloring of, 168
electro-deposition on iron, 167
metallic, finely divided, 208
quantitative estimation, 142
salts preservatives of stone, 208
sulphocarbolate, 208
Cocks, lute for, 173
Cornaceæ, 302
Cotton, disinfecting, 165
hæmostatic, 165
Coumarin, decomposition of, 267
Crab orchard salt, analysis of, 142
Cream of tartar, adulterated, 343
market of, 398
Credentials of delegates, 28
Mr. H. B. Brady, 26
Crocus sativus, 295
Cruciferæ, 266, 299
Cubebs, trade in, 402
Cucumber ointment, 150
Cucurbitaceæ, 301
Cundurango, 308
Cupuliferæ, 306
Curaçoa cordial, 352
Curcas purgans, 293
Curcuma longa, 294
Curcumin, 294
Cyanogen, iodide of, in iodine, 189
Cyclopia Vogelii, 308
Cynoglossina, 289
Cyphomandra betacea, new source for citric acid, 220
Daphne mezereum, 292
Decoctions, 144
Decoctum aloes comp., 144
Delegate from University of Michigan not received, 47
objection against, 29
Delegates, list of, 28, 46
Dextrine and gum Arabic, 274
insoluble, 259
in narcotic extracts, 145
purification of, 259
Diarrhœa mixture, 487
Dickey, George S., letter from, 41
Digitalis purpurea, 291
Diosmaceæ, 268
Dipteraceæ, 267
Dipterix odorata, 267
Diehl, C. L., apparatus for liquor ammoniæ, 100, 518
Disinfectants, 165
Doliber, Thomas, aromatic sulphuric acid, 107, 444
Drop machine, extemporaneous, 136
Drops, size of, 140
Drug business, essay on, 409
Drugs and commercial products, 331
animal, 311
crude, 375
indigenous, 309
market value of, 405
powdered, 375
vegetable, 262
Dualin, 169

Ear-wax, solvent for, 167
Ebert, Albert E., commercial extract of beef, 79, 512
Echiina, 289
Education, pharmaceutical, 96, 425
Elais guineensis, 296
Elements, metallic, 197
non-metallic, 176
Elder flowers, impure, 334
Elixir bark ferrated, 163, 352
bark, iron, and bismuth, 352
and strychnia, 352
bromide potassium, 351
sodium, 351
calisayæ, 352
citro-lactate of iron, 351
lactate of iron, and pepsin, 352
pepsin, bismuth, and strychnia, 350
phosphate iron, quinia, and strychnia, 351
simple, 350
taraxacum comp , 350
Elixirs, formulary of, 162, 350
Elm bark, market supply of, 401
Emulsion of almonds, 149
Engravings, lacquer for, 174
Epsom salt substituted by Glauber's salt, 344
Ergot, cholesterin in, 262
preservation of, 262

Ericaceæ, 303
Erythræa chilensis, 287
Erythrocentaurin, 287
Esenbeckia febrifuga, alkaloid of, 268
Essences, culinary, 163
Ether, acetic, test for alcohol in, 243
amylo-nitrous, 249
nitrous, spirit of, 243
test for water in, 242
Etherization, theory of, 242
Eucalyptus globulus, 275
Euphorbiaceæ, 293, 306
Exhibition, official visit to, 69
Exports of Virginia, A.D. 1610, 79, 491
Explosive agents, 169
Extract of malt, 146
Extract of meat, 79, 512
Liebig's, 146, 512
Extracts, adulterated, 347
dry narcotic, 145
ethereal narcotic, 145
solid alcoholic, 115, 468
yield of, 145
Extractum aconiti alcoh., 469
arnicæ, 470
belladonnæ, 470
cantharides fluidum, 457
carnis fluidum, 147
cinchonæ, 471
conii alcoh., 472
digitalis alcoh., 472
dulcamaræ, 473
ferri pomatum, 145
hellebori alcoh., 473
hyoscyami alcoh., 474
ignatiæ, 474
jalapæ, 116, 465, 475
nucis vomicæ, 475
podophylli, 476
rhei fluidum, 477
senegæ alcoh., 477
fluidum, 114, 453, 454
stramonii alcoh., 478
valerianæ, alcoh., 478

Fennel, pulverization of, 276
Ferguson, R. B., suppositories, 83, 480
Ficoideæ, 300
Filices, 307
Filtering apparatus, 136
Filters and filtering-papers, 139
Filtration, improvement for rapid, 135
Flannel, restoring white color of, 168
Flora, medical, of California, 297
Flour, change in, 238
Fluid extracts, 147
and their menstrua, 136
weak commercial, 348
Flux, new, for minerals, 142
Fraxineæ, 284
Fruit syrups, 162
Fulmar oil, 153
Fumariaceæ, 299
Fungi in impure water, 262, 263

Gamboge, trade in, 400
Garrigues, S. S., insect powder, 115, 505
Garryaceæ, 306
Gelatinæ medicatæ in lamellis, 164
Gentianaceæ, 287, 305
Gentian root, market of, 397
Geraniaceæ, 268, 300
Glass, boring or cutting of, 170
gilding of, 168
Glauber's salt substituted for Epsom salt, 344
Glucose, manufacture of, 256
products of decomposition, 257
volumetric estimation of, 256
Gluten, change of, in flour, 238
Glycerin and tannin in pencil form, 167
cement, 171
commercial, 539
butyric acid in, 255
effects of, in pharmaceutical preparations, 106, 439
in pills, 157
in soap, 159
new test solution for, 258
preservative powers of, 255
solubility of glue in, 254
Glycyrrhiza glabra, 275
Glycyrrhizin, preparation of, 275
Gold, deposition of, on glass, 168
experimental researches on, 210
lacquers, 174
new chloride, 210
Gordon, W. J. M., glycerin in pharmaceutical preparations, 104, 439
Granataceæ, 275
Graminaceæ, 307
Grape-sugar. *See* Glucose.
Grossulaceæ, 301
Guaiac resin solution for medicinal use, 148
supply in market, 403
Gum arabic and dextrine, 274
adulterated, 334
trade in, 403
Guarana, 267
Gun-cotton, constitution of, 261
exploded by camphor, 261
with permanganate, 165
Gutta percha cement, 172
white, 286

Hæmatosin, a new remedy, 236
Hair tonics containing lead, 349
Hanbury, Daniel, note on the exports of Virginia, A.D. 1610, 79, 491
Harbaugh, Val., deceased, 39
Harrop, Joseph, preservation of herbs, 121, 495
Heat, application of, to stoneware pans, 138
Hellebore, black, in market, 395
Hendel, Samuel D., deceased, 39
Herbs, preservation of, 121, 495
Honey, clarification of, 312
tinted, 313

Humulus lupulus, paper from, 293
Hydrogen, metallic, 177
peroxide, 178
production of, 177
Hydrometer, Beaumé's, 139
Hydrophyllaceæ, 304
Hypericaceæ, 299
Hyposulphites, reagent for, 193

Ice, artificial production of, 138
Indigo, artificial production of, 274
Indigofera tinctoria, 273
Indigotin, solvent for, 273
Insect powder, 115, 505
Invitations extended, 64
received, 27, 110
Iodal, 254
Iodides, analysis of insoluble, 190
mutation of colors in double, 191
Iodine, detection of, 188, 189
from Chili saltpetre, 187
impure, 189
market of, 399
Iodoform, 254
impure, 344
Ipecac, poor quality of some, 335
supply in market, 396
Ipomœa simulans, 287
Iridaceæ, 295, 307
Iron, ammonio-citrate, 215
and soda, albuminate of, 161
benzoate, 214
citrate, 215
coloring of, 168
dialized sesquioxide, 214
electro-deposition of copper and brass on, 167
fastening on leather, 175
iodate, 214
lead in powdered, 213
nitrate, 215
obtained by electrolysis, 213
potassio-sulphide, 216
subcarbonate, 528
sodio-pyrophosphate, 214
Isonandra gutta, 286
Ivain, 285
Ivory, bleaching of, 168
silvering of, 169

Jalap, officinal extract of, 116, 465
poor and adulterated, 335
supply in market, 397
Tampico, origin of, 287
resin of, 288
Juglandaceæ, 293, 306
Juglans regia, 293
Juniper berries, market of, 397

Kino, supply of, 403
Kousso, market supply of, 401

Labels, composition for gumming, 174
Labiatæ, 304
Lacquers, 174
Lamp, Philip's carbo-oxygen, 136
Lard, adulterated, 335
Lauraceæ, 305
Law, pharmacy, of New York, 373
of Ontario, 364
of Rhode Island, 359
of Virginia, 374
Lead, acetate, adulterated, 344
action of water on, 211, 212
crystallized basic acetate, 212
in ferri pulvis, 213
poisoning, 212
subacetate, 212
Leather, fastening on iron, 175
Legislation, pharmaceutical, 314, 353
Leguminosæ, 272, 300
Legumin, decomposition of, 236
Lemberger, Joseph L., urethral suppositories, 85, 482
wild cherry bark, 112, 503
Lichenes, 263
Lichens, alcohol from, 241
Liliaceæ, 296, 307
Lime. *See* Calcium.
Linaceæ, 300
Linimentum camphoræ, 148
Liquids, not miscible, boiling of, 138
Liquor dealers' license to apothecaries, discussion, 65
Liquors on exhibition, 383
List of authorized agents, 564
committees, 5
deceased members, 591
delegates, 26, 28, 46
members dropped, 594
present, 23
officers, 4, 7
publications received, 562
queries, 11
resignations, 593
societies, &c., receiving Proceedings, 559
Literature, pharmaceutical, 321
Litmus paper, preparation of, 515
Logwood coloring in wines, 163
Lowd, John C., on powdered camphor, 441
Lonicera xylosteum, 277
Lute for corks, &c., 173
Lutein, 235
Lycopodium, adulterated, 336
supply of, 404
vinegar from, 264
Lyon, Charles H., deceased, 39
Lythraceæ, 301

Macpherson, George B., deceased, 39
Magnesium, ammonio-phosphate, spontaneous decomposition of, 206

Magnesium, as a reducing agent, 205
and sodium citrate, 205
citrate, adulterated, 347
composition of solution, 532
formula for, 104, 530
sulphate, substituted by Glauber's salt, 344
Maisch, John M., African saffron, 106, 506
report on legislation, 353
secretary's report, 40
Malt extract, 146
Malvaceæ, 300
Manganese, salts of, purification from cobalt, 216
Manna, 284
imitated, 336
market, 404
Mannite, artificial production of, 255
Maranta arundinacea, 294
Marantaceæ, 294
Markoe, G. F. H., commercial citrate of magnesia, 103, 532
Massot, Eugene L., deceased, 39
Materia medica, reports and essays, 491
McKesson, John, Jr., report on the drug market, 388
Meat, extract of, 79, 146, 512
fluid extract of, 147
new method of preserving, 146
Meeting, next annual, 111
of 1876, 76
Members, deceased, 38, 591
dropped, 594
elected, 26, 35, 43, 52, 111
honorary, 574
elected, 86
present at meeting, 23
resigned, 593
roll of, 575
Mercury, chlorides, 208, 209
and sodium chloride, 209
market supply, 394
Metachloral, 247
Milk, condensed, 167
preservative against lead poisoning, 212
Mineral waters, analysis of, 141
Minutes of the 1st session, 25
2d session, 46
3d session, 70
4th session, 82
5th session, 99
6th session, 112
Mistura cretæ, 149
Mixtures, 148
infantile, 169
Moith, A. Th., artificial mineral waters, 114, 483
Moore, J. Faris, inaugural address as president *pro tem.*, 25
report on unofficinal formulas, 350
Morphia acetate, decomposition of, 224
Morphia acetate, for hypodermic injections, 225
hydrocyanate, 225
sulphate, adulterated, 345
Morphiometry, 265
Moschatina, 286
Mould for suppositories, 85, 135, 482
Mucilage of tragacanth, 149
prevention of mould in, 166
Musci, 308
Musk in mixtures, 149
Mycetes, 262
Myricaceæ, 306
Myroxylon peruiferum, 272
Myrtaceæ, 275

Naphthylamine, preparation of, 223
Narceina, test for, 226
Narcotina, 226
Necrology, 38, 319
Neurin, 235
Nickel in electro-plating, 216
Niinfat of Yucatan, 312
Nipples, application for sore, 489
Nitrates, reduction of, 180
Nitrobenzole, test for, in oil of bitter almonds, 154
Nitrogen, action of nascent, 179
preparation of, 179
North German Apothecaries' Association, address of, 77
telegram to, 100
Nucitannin, 293
Nymphæaceæ, 298

Obituary, 319
Officers, election of, 25, 51
Oil, castor, soap, 159
supply in market, 395
cod-liver, Newfoundland, 153
fulmar, 153
of almonds, bitter, 154
fixed, 152
anise, market of, 399
apricot seeds, 152
cassia, in market, 395
cloves, detection of carbolic acid in, 155, 336
smuggled, 336
eucalyptus, 275
geranium, 268
iva, 285
lemon, adulterated, 336
market supply, 396
mustard, volatile, 266
patchouly, 291
peach kernels, 152
peppermint, adulterated, 62, 336
fluorescence of, 156
local anæsthetic, 156
market supply, 399
rose, adulterated, 333
rue, synthesis of, 268

Oil of sandalwood, in pills, 157
valerian, behavior to acids, 155
ylang-ylang, 308
olive and its adulterations, 508
test for, 153, 337
supply of market, 401
palm, 296
Oils, bleaching of, 152
essential, 154, 377
examination of, 153
fatty, 152
of cruciferæ, 266
purification of, 155
test for free acids in, 154
Ointments, 150
benzoinating, 150
Oleaceæ, 305
Onagraceæ, 301
Operations and processes, 138
Ophelia chirayta, 287
Opium, adulterated, 337
production of, 103, 264, 265
supply in market, 392
wax, 264
Opuntia ficus indica, 276
Orchidaceæ, 307
Orris root supply, 401
Orynski, L., preparation of syrups without heat, 114, 451
Osmium amide, 211
Oxalidaceæ, 300
Oxygen, 176
Ozone, 176

Paints, oils, &c., on exhibition, 383
Palmæ, 296
Pans, stoneware, heating of, 138
Papaveraceæ, 264, 299
Paper, filtering, 139
from hop stems, 293
styptic, 167
test, 141
waterproof, 170, 171
Papers, discussion on reading of, 92
Pareira root, 113, 500
Parmelia scruposa, 263
Parrish, Clemmons, rennet and pepsin, 79, 511
Paste of caseine, 173
preservation of, 173
Pastilles, fumigating, of coffee, 490
Patellaria scruposa, 263
Paullinia sorbilis, 267
Pelargonium odoratissimum, 268
Pepsin and rennet, 511
elixirs of, 232
essence, 233
glycerin extract of, 234
liquid and saccharated, 233
preparation of, 233
Perfumery and toilet articles on exhibition, 383
Petroleum, composition of American, 238
illuminating gas from, 239
Petroleum, testing of, 240
Pharaoh's serpents, new, 165
Pharmaceuticals on exhibition, 380
Pharmaceutical Congress, discussion on inviting, 71
Pharmacognosy, 262
Pharmacy in Canada, 429
report on, 135
reports and essays, 409
Phenyl brown, 250
Phenol, synthesis of, 250
Phormium tenax, 296
Phosphorus, action of ammonia upon, 196
arsenic in, 195
detection of, 194
impure, 345
Phytochemistry, substitution in, 309
Piles, remedy for itching, 489
Pills, carbolic acid, 157
coating of, with resin, 157
excipient for, 157
glycerin in, 157
of oil of sandalwood, 157
Pine, Riga, 271
Pitch, Burgundy, adulterated, 333
Plasters, caoutchouc in, 158
Platinum in Lapland, 211
Plumbaginaceæ, 304
Pogostemon Patchouly, 291
Poisons, precautions in dispensing, 103, 436
Polemoniaceæ, 304
Polygalaceæ, 300
Polygonaceæ, 291, 305
Pomegranate bark, 275
Poppy culture, 103, 264, 265
Populin, artificial formation, 257
Porcelain vessels, repairing of, 170
Portulacaceæ, 299
Potassium bitartrate, 197
adulterated, 343
Potassium bromide, preparation of, 186
impure, 345
cantharidate, 164
chlorate in market, 396
ferricyanide, preparation, 197
iodate, 189, 191
iodide, 191
impure, 345
oxalates, solubility of, 197
permanganate as disinfectant, 165, 166, 197
behavior with acids, 216
behavior with alkalies, 217
Powders, 158
Prescott, A. B., pharmaceutical education, 96, 425
sulphophenic acid, 114, 550
President's annual address, 43
inaugural address, 25, 53
Primulaceæ, 304
Prize queries for 1871, 317
Proceedings, cost of, 48

Proceedings, stock of, 40
Pyrethrum for toothache, 489
Pyroxylin, properties of, 261

Quinia and iron, citrate, poor quality of, 342
ethereal solution of, 229
market supply of, 393
precipitated by KI, 230
substituted by cinchonia, 230
sulphocarbolate, 230
sulphate, adulterated, 346
substituted for morphia, 345
Quiniometry, 280–282

Ranunculaceæ, 264, 298
Regulator, automatic, for temperatures, 139
Remington Joseph P., commercial glycerin, 87, 539
report on adulterations, 59, 330
tartar emetic, 115, 529
Rennet and pepsin, 511
Repercolation, 136
Report of Secretary, 40
of Rhode Island Board of Pharmacy, 356
of Treasurer, 48
on Index, 53
Reports of Committees.
Auditing, 62
Executive, 37
on adulteration, 59, 330
credentials, 28, 46
decennial Index, 97, 117
delegation from University of Michigan, 47
drug market, 53, 388
exhibition, 375
legislation, 70, 353
liquor dealers' license of apothecaries, 86
nominations, 50
papers and queries, 54
Pharmaceutical Congress, 70
photographic album, 62
place of meeting, 96
progress of pharmacy, 112, 129
unofficinal formulas, 69, 350
Committee, 129
presented, 36
special and volunteer, 409
read, 79, 83, 100, 112
Resins, nature and properties of, 310
Resolution of invitation, 64
of thanks, 82
to remit dues of certain members, 97
to revise list of societies, &c., receiving Proceedings, 99
Retorts, removing salts from, 137
Rhamnaceæ, 270, 300
Rhamnus infectoria, 270
Rhinanthus alectorolophus, 290
Rhubarb, adulteration with turmeric, 291
note on, 497
poor qualities of powdered, 338
trade in, 398
Rice, L. M., morphia strength of tincture of opium, 103, 447
Ricinus communis, 293
Rittenhouse, Henry N., fluid extract of senega, 114, 453
olive oil and its adulteration, 95, 508
Robbins, Daniel C., the drug business, 114, 409
Rochelle salt, adulterated, 346
Roemer, Daniel, deceased, 39
Rosaceæ, 301
Rose leaves, trade in, 402
Rubiaceæ, 277, 302
Rubia tinctorum, 284
Rutaceæ, 300
Rum, to distinguish genuine from artificial, 241
Ruta graveolens, 269

Sabbatia angularis, 287
Saffron, adulteration of, 295, 338
African, 506
American, 404
culture of, 295
syrup of, 161
Salicaceæ, 306
Salt, crab-orchard, analysis of, 142
Salts, residuary, removal from retorts, 137
Santonin in solution, 164
Sapindaceæ, 267, 300
Sapotaceæ, 286
Sargent, E. H., citrate of magnesia, 104, 530
Sarkosina from coffeidina, 231
Sarsaparilla, poor quality of, 338
Saturation tables, Attfield's, 141
Saunders, William, Pharmacy in Canada, 429
solid alcoholic extracts, 115, 468
Saururaceæ, 306
Savine ointment, 150
Saxifragaceæ, 301
Scrophulariaceæ, 290, 304
Senega, admixture in, 338
fluid extract of, 114, 453, 454
supply in market, 397
syrup of, 160
Senna, active principles of, 272
confection of, 147
impure, 338
market supply of, 404

Sheppard, S. A. D., medicated waters, 107, 442
Shop furniture on exhibition, 384
Silicates, solubility of, in water, 196
Silicon, 197
Silver, bromide, chloride, and iodide, separation of, 190
chloride, reduction of, 202
cleaning of blackened, 175
nitrate, impure, 346
preparation of, 202
preparation of pure, 201
volumetric estimation, 202
Silvering ivory, 169
Simarubaceæ, 270
Sinapis nigra, 266
Smilaceæ, 295
Soap, Castile, factitious, 338
impure, 62
castor oil, 159
detection of caustic alkali in, 159
glycerin, 159
salting of potash, 159
technical analysis of, 159
Soda, caustic, preparation from sodium, 198
water apparatus, exhibited, 385
Sodium, bromide, preparation of, 187
carbonate, adulteration of, 199
commercial bicarbonate, 524
hydrate, 198
santonate, 164
silicate, reactions of, 199
Solanaceæ, 289, 305
alkaloids of, 229, 289
Solutions, saline, freezing of, 137
Spectroscope, reversion, 139
Squibb, E. R., M.D., cantharides and a blistering liquid, 83, 457
chloral, 88, 543
commercial bicarbonate of soda, 524
extract of jalap, 116, 465
fluid extract of senega, 114, 454
litmus paper, 103, 515
pareira, 113, 500
rhubarb, 497
Squill, syrup of, 160
Stain, walnut color, for wood, 168
Stains, removing, 171
Stamp tax of apothecaries, discussion on, 65, 100
Starch, iodide of, soluble, 260
substitution products, 261
Steel files for cutting glass, 170
Stills, stoneware, heating of, 138
Stomach pump, substitution for, 167
Stramonium, estimation of alkaloid in, 289
Strychnia, color tests of, 226, 227
Strychnos potatorum, 286
Sugar, beet-root, 259
purification of, 258
substitution products, 261
Sugars very numerous, 256
Sulpho-urea, 236
Sulphur compounds, organic, preparation of, 243
detection in coal gas, 240
detection of, 191
flowers of, adulterated, 347
milk of, impure, 60, 347
solubility of, 192
source of, 192
Sumbulus moschatus, 277
Suppositories, 83, 480
mould for, 85, 135
preparation, 83, 159, 480
urethral, 84, 85, 482
Surgical instruments on exhibition, 386
Synanthrose, 258
Syrups, 160
adulterated with glucose, 349
fruit, 162
of the phosphates, 161
preparation of, without heat, 451
purification of, 258
Syrupus acidi citrici, 160
calcis lacto-phosphatis, 161
croci, 161
ferri et sodæ albuminat., 161
ipecacuanhæ, 160
senegæ, 160

Tartar emetic, commercial, 529
impure, 347
Taylor, William, deceased, 39
Temperatures, boiling, of non-miscible liquids, 138
for reducing oxides by H, 138
regulator for, 139
Thallium, preservation of, 210
Thea viridis, culture in Tennessee, 267
Theina, preparation of, 231
Thymelaceæ, 292, 305
Tin-foil containing lead, 211
Tin, separation from antimony and arsenic, 143
Tinctura cimicifugæ concent., 488
cinchonæ comp., 162
opii, morphia strength of, 447
physostigmæ, 162
Tonca, market supply of, 402
Tragacanth, mucilage of, 149
Trinkerit, 310
Tungsten, elastic compound of, 219

Umbelliferæ, 276, 301
Unguent. cucumeris, 150
hydrarg. nitrat., 150
sabinæ, 150

Unguent. sulphuris iodidi, 150
Unona odoratissima, 308
Urea, sulpho, 236
Urine, bile in, test for, 234
cryptophanic acid in, 235
Urticaceæ, 293, 306

Vanilla, market of, 402
Valerian, trade in, 404
Varnishes, 174, 175
Verbenaceæ, 304
Vessels, removing albumen from, 137
Vicia sativa, 273
Vinegar, impure, 339
Violaceæ, 299
Vitaceæ, 300

Warren, William, deceased, 39
Warts, cure for, 167
Water, organic matter in, 262, 263
preventing it from becoming putrid, 166
Waters, medicated, 150, 442
solutions of alkaloids in, 143
mineral, analysis of, 141
manufacture of, 143,483
Waterproof compound, 171
Wax, bees, adulteration of, 311, 333
carnauba, 308
Weights, aluminum, 135
Wenzell, William T., report on the progress of pharmacy, 129
Wild cherry bark, 503
Wine of iron, bitter, 351
Wines, logwood coloring, 163
on exhibition, 383
preservation of, 163

Zinc, influence upon vegetation, 207
phosphite, 207
sulphite, 206
sulpho-carbolate, 207
Zingiberaceæ, 294

INDEX

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GENERAL INDEX.

VOLS. IX TO XVII, INCLUSIVE.

Abbreviations in report of progress of pharmacy, x, 53; xi, 50; xii, 56; xiii, 97; xiv, 196; xv, 125; xvi, 130; xvii, 124
Abies excelsa, xvi, 199
Abietinic acid, xi, 140
Abolition of life membership, xv, 72
Absentees' excuses, xi, 11, 12
Absorption of poisons, xi, 154
Acacia Arabica, xv, 178; xvi, 174
  catechu, xi, 82
Acanthaceæ, xiv, 162
Acaroid resin, xv, 257
Accidental deaths from poisoning, ix, 34
Account of trip on Thomas Collyer, xv, 122
Aceta, xii, 285
Acetanilide, xii, 160
Acetate of alumina, xv, 230
  bismuth, xv, 222
  ethyle, xi, 136
  lead, basic, xv, 230
  sanguinarina, xi, 214
  soda, x, 156; xv, 230
Acetic acid, x, 133, 156; xi, 136, 169
  glacial, xi, 136
  oxidation of, xvii, 247
  testing strength of, xvii, 247
  ether, x, 160; xi, 136
  fermentation, xiv, 170
  syrups, x, 79
Acetum, x, 134
  ipecacuanhæ, x, 79
  opii, xii, 79
  scillæ, xii, 79
Acetylene, x, 160; xv, 231; xvi, 272
Achillea millefolium, x, 113
Acid abietinic, xi, 140
  acetic, x, 133, 156; xi, 136, 167; xv, 230; xvi, 243
  glacial, xi, 136
  oxidation of, xvii, 247
  testing, xvii, 247
Acid, aconitic, xi, 139
  æscinic, xvi, 179
  acrylic, xi, 138
  amido-valerianic, xvi, 247
  anchoic, xi, 138
  angelicic, xv, 233
  anthranilic, xvii, 248
  antimonious, xv, 193
  apelaic, xi, 138
  arsenic, xiv, 178
  arsenious, x, 132, 152; xi, 125; xiii, 127; xv, 223; xvi, 211
  azelaic, xi, 138
  behenolic, xvi, 253
  benzoic, xi, 141; xii, 154; xiii, 129; xiv, 181; xv, 235
  conversion into anthranilic acid, xvii, 248
  sublimation of, xvii, 247
  benzolic, xv, 235
  boracic, xi, 160; xiv, 172, 183
  tests, x, 180
  boric, xv, 206
  brassylic, xvi, 254
  bromocuminic, xv, 234
  bromophosphorous, xvi, 219
  butyric, x, 156; xi, 136; xv, 233; xvi, 246
  caïncic, xi, 146
  camphoric, xi, 139; xii, 153; xvi, 254
  capronic, xi, 137; xvi, 255
  carbolic, xi, 135; xiii, 130; xiv, 181
  difference from, xvii, 234
  remarks on, x, 37; xii, 127; xv, 197, 236; xvi, 90, 94, 119, 206, 429
  carbonic, x, 140; xi, 101, 159; xiii, 117; xvi, 229; xvii, 196

Acid carbonic, estimation in water, xvii, 193
in solution, xvi, 221
water, xvi, 155
tests, x, 179
carminic, xv, 239
cathartic, xv, 234
chelidonic, xii, 154
chloric, xv, 203; xvi, 215
chlorohydric, x, 129
chlorovalerianic, xvi, 247
chromic, xi, 125, 164; xii, 124, 146; xiv, 184; xv, 196
chrysamic, xv, 236
chrysophanic, xi, 140; xiv, 180; xv, 63, 371; xvi, 252
cinnamic, xi, 141
derivatives, xvii, 248
citric, xvi, 245, 328; xvii, 127
distinguished from, xiv, 188
examination of, xvii, 254
citricum, x, 134; xiv, 180; xv, 196, 232; xvii, 127
cobaltic, xiii, 126
coffeic, xvi, 253
coffeotannic, xv, 237
coumaric, xvii, 255
crotonic, xv, 238
cyanacetic, xvi, 240
cyanhydrochloric, xvi, 240
dichloracetic, as a caustic, xvii, 247
di-oxybehenolic, xvi, 254
ellagic, xvii, 253
erucic, xii, 154; xvi, 253
eugenic, xi, 143; xv, 236
filicic, xvi, 251
fluomanganic, xvi, 217
formic, xi, 136; xiv, 179; xv, 233; xvi, 246
preparation of, xvii, 253
free, test for, xvi, 147
fulminic, x, 158
fumaric, xi, 138
gallic, xii, 154; xv, 238; xvi, 249; xvii, 253
estimation of, xii, 179
glycolic, xv, 239
guaiacic, xi, 142
hippuric, xi, 141; xvi, 257
in urine, xii, 172
hydriodic, xiv, 149, 172; xvi, 78, 216, 383
dilute, xii, 76
hydrobromic, x, 143
hydrochloric, x, 143; xi, 101, 115; xii, 136
Acid hydrochloric, contaminated with sulphur oxides, xvi, 409
hydrocyanic, x, 155, 185; xi, 128; xii, 125; xiv, 79; xv, 227; xvi, 117, 419; xvii, 197
antidote for, xiv, 166
detection, xvii, 256
dilute, xiv, 251
formation of, xvii, 256
homologues, xvi, 239
hydrates, xvii, 256
test for, xiv, 189
in bitter almond water, xii, 180
hydroparacoumaric, xvi, 253
hypobromous, xi, 116
hypogæic, xvi, 253
iodic, x, 143
isocitric, xvii, 254
isodulcitic, xvi, 252
isomalic, xv, 232
kinic, x, 158; xi, 140; xii, 153; xv, 234
kinovic, xii, 105; xvi, 258
kreasotic, xi, 141
kynurenic, xv, 239
lactic, x, 157
in croup, xv, 250
lactucic, xi, 143
larixinic, xi, 140
lauric, xii, 153
lecanoric, xv, 264
lepargylic, xi, 138
leucic, xii, 154
maleïnic, xi, 138
malic, x, 157; xi, 138
malonic, xv, 232
manganous, xi, 122
meconic, x, 186
mellilotic, xvii, 255
molybdic, x, 152; xi, 125
nitric, x, 128, 140; xi, 158; xii, 134
action on metals, xiv, 169
diluted, xi, 101
estimation of, xii, 175
tests, x, 179; xvii, 194
nitro-muriatic, xi, 115
nitrous, xii, 134; xv, 201; xvi, 213
determination of, xiv, 180

Acid nitrous, tests, x, 178
nitro-oxyphenyl-sulph, xvii, 236
new in urine, xiv, 180
sulphur, xiv, 170
œnanthic, x, 156; xi, 137
oleic, xv, 238
organic new, xiii, 129
orsellic, xv, 264
oxalic, x, 156; xi, 137; xii, 154; xiv, 179; xv, 197, 231; xvi, 244
poisonous effects of, xii, 169
production of, xvii, 250
sublimation of, xvii, 250
oxyacetic, xv, 239
perbromic, xii, 136
perchloric, x, 142; xiii, 113
periodic, xv, 204
permanganic, x, 148; xi, 122; xii, 143
phenic, xvi, 255
phenylic, x, 134
phosphoric, x, 142, 157; xi, 101, 114, 161; xiv, 171; xvii, 208
dilute, xiv, 248
estimation of, xii, 175
test, x, 180; xv, 193, 205
phospho-molybdic, x, 186; xii, 148
as a test, x, 229
phosphorous, xv, 206; xvi, 218
phtalic, xvi, 257
phyllocyanic, xv, 263
picramic, xvi, 248
picric, xi, 141; xii, 153; xiv, 189; xv, 236; xvi, 206, 248
piperic, x, 158; xi, 140
proprionic, xi, 136; xv, 233
proto-catechuic, xv, 238
pyro-acetic, xiv, 180
pyrogallic, xii, 154; xiv, 180; xv, 238
pyrophosphotriamic, xvi, 218
quercotannic, xvi, 249
rheic, xvi, 251
rheotannic, xvi, 250
salicylic, xi, 141
selenic, xv, 203
silicic, xv, 206
estimation of, xiv, 184
stains removed, xiv, 156
succinic, x, 157; xi, 137; xvi, 248; xvii, 250
sulphydric, xv, 191, 201
apparatus, xv, 141
Acid sulpho-acetic, xiii, 129
benzoic, xiii, 129
benzolic, xv, 235
succinic, xiii, 129
sulphuric, x, 128, 141; xi, 113; xii, 136
aromatic, x, 128; xv, 171; xvii, 148
estimation of, xii, 196; xiv, 184
volumetric, xvii, 205.
impurities of, xvii, 204
manufacture of, xvii, 203
sulphurous, x, 141; xi, 113; xii, 77; xv, 191
preparation, xvii, 208
solution, xii, 88
tests, x, 179
tannic, x, 135, 158; xi, 167; xii, 126; xv, 236; xvi, 249
conversion into gallic, xvii, 253
determination volumetric, xvii, 252
estimation of, xii, 176.
from Chinese galls, xvii, 251
odor, xii, 255
pathological, xvii, 250
physiological, xvii, 251
tartaric, x, 36; xi, 138; xv, 231; xvi, 245
adulterated, xv, 283
distinguished from citric, xiv, 188
estimation of, xvii, 253
from American wines, xv, 377
thebolactic, xiv, 180
titanic, xiv, 184; xv, 220; xvi, 225
trithionic, xiv, 170
toluylic, xv, 239
tungstic, x, 152
uric, xii, 154; xv, 239; xvi, 257; xvii, 257
concretions, xii, 172
test for, xiv, 188
valerianic, xvi, 115, 397
valerianic, artificial and of root, xvii, 249,
preparation of, xvii, 248, 249
veratric, x, 158

Acid viridinic, xvi, 251
xanthic, xi, 137
xylic, xv, 235
Acids, xi, 61, 168
estimation, x, 178
fatty, xv, 238
and halogens, x, 178
organic, x, 133, 156, 185; xii, 126, 153, 179; xv, 196, 230; xvi, 243; xvii, 248
and halogens, xii, 175
Acidulous juices, x, 78
Acidum arseniosum, x, 132
carbonicum, xi, 101
citricum, x, 134
hydrochloricum, xi, 101
nitricum, xi, 101
phenylicum, x, 134
phosphoricum, xi, 101
sulphuricum, x, 128
aromat., x, 128
tannicum, x, 135
tanno-arsenicum, x, 132
tartaricum, x, 134
Acne, treatment of, xiii, 140
Aconitia, x, 163; xii, 129; xv, 241
Aconite root, xi, 176
comparison of American and European, ix, 89; xi, 196
Aconiti radicis, tinctura, x, 173
Aconitina, English and German, xvii, 263
Aconitum, x, 92; xi, 71
ferox, xiv, 157
heterophyllum, xv, 172
lycoctonum, xiv, 157
napellus, xii, 95; xiv, 157; xv, 172
Acoraceæ, xiii, 116
Acorin, xvii, 246
Acorus calami, xiii, 116
Acrid principle of ranunculus sceleratus, ix, 114
Acrolein, ix, 123; xv, 198
Acrylic acid, xi, 138
Act of incorporation, ix, 11; xiv, 33, 66; xvi, 30, 55
proposition for, x, 39
Actinic power of light, measuring of, xii, 147
rays, influence of, xiv, 56
Action of chalk in lactic fermentation, xv, 144
ether on iodide of potassium, ix, 119
Action of ether on foliage, xv, 266
hydrogen on metallic oxides, xv, 200
Active principles of veratrum viride, x, 222
Adansonia digitata, xvi, 178
Adantheria pavonia, xvi, 182
Adhesive plaster, xiv, 153; xv, 161; xvi, 162
tissue, xiii, 109
Adiantum excisum, xvi, 203
Address of Pres't Colcord, ix, 9
Kiersted, ix, 32; x, 18
Moore on assuming the chair, xi, 32
on retiring, xii, 26
Gordon, xiii, 30
Lincoln, xiii, 45; xiv, 29
Stearns, xiv, 39; xv, 23
Milhau, xv, 39; xvi, 29
Parrish, xvi, 45; xvii, 29
Adjournment, x, 48; xi, 48; xii, 53; xiii, 96; xiv, 80; xv, 121; xvi, 124; xvii, 120
Admission fee, argument for, xiv, 30
adopted, xiv, 66
Adulteration and impurities, x, 189
of almond oil, xii, 80
arrowroot, xiii, 115
chloroform, ix, 143
liquors, ix, 140
milk, ix, 136
opium with lead, ix, 142
powdered gum arabic, xii, 73
powdered rhubarb, detection of, ix, 100
powdered tartaric acid, xii, 74
red bark, xiv, 161
wax, xii, 117
Aegle marmeles, xv, 176
Aerated chalybeate water, xv, 69
Æsculus glabra or buckeye, ix, 88
hippocastanum, x, 97
Æsthetical pharmacy, essay on, xi, 42, 226
Æther, x, 135; xi, 187
fortior, xi, 188
Ætheris nitrici spiritus, x, 71

African turmeric, ix, 89
Agaricus albus, xiv, 164
bulbosus, xi, 97; xv, 191
muscarius, xi, 97
Agave Americana, xv, 189; xvi, 200
Agricultural chemistry, x, 174; xi, 153
Aich's metal, x, 157
Ailanthus glandulosus, ix, 92; x, 102; xi, 81; xii, 98
in tænia, ix, 92
Air, ammonia from, x, 178
pump, xv, 140
Albizzia anthelmintica, x, 103; xi, 83
Albumen, xi, 156; xii, 167; xv, 265; xvi, 284
precipitated by camphor, xii, 181
Albumen, xv, 265
Alcanin, xv, 263
Alcohol, x, 135; xi, 177; xv, 248, 273; xvi, 266
and allied substances, xv, 248
amylic, x, 160; xi, 134
benzylic, xi, 135
deodorizing, xvi, 114, 393
detection in liquids, xvii, 232
economy in the use of, xii, 72; xiii, 201; xiv, 147.
ethylic, xi, 133; xvii, 231
fraud in makers of, xv, 49
from beet roots, xi, 167
coal oil waste, xv, 150
lichen, xvii, 231
wood, xv, 150
market, xv, 273
methylic, xi, 133; xii, 156; xiv, 181, 191
artificial, xvii, 233
conversion into ethyl alcohol, xvii, 233
detection of, xvii, 157, 232
pure, x, 160
test for, xiii, 128
œnanthylic, xi, 134
phenylic, xi, 135
price of, xi, 176; xv, 42, 276, 281
production of in the U. S., ix, 160
propenyl, xvii, 237
propyl, xvii, 237
normal, xvii, 234
in solutions, x, 70
Alcohol seizures, xv, 50
substitution, xiv, 57, 208
Alcoholic fermentation, ix, 116
fluid extracts, xvi, 226
solution of chloride of copper a disinfectant, xv, 145
strength of menstruum for tinctures of gum resins, xvii, 381
Alcoholized iron, xv, 162
Alcoholometer, new, xvii, 136
Alcoholometry, xi, 166
Alcohols, x, 135, 158; xii, 127, 155; xv, 248; xvi, 266
and derivatives, x, 158; xiii, 128
and ethers, x, 135
fatty, xvi, 271
hexatomic, xvii, 243
monoatomic, x, 158; xvii, 231
secondary aromatic, xvii, 234
triatomic, x, 161; xvii, 237
Aldehyde, x, 160; xii, 156; xvii, 255
cyanhydrate of, xvi, 240
Aldehydine, xvii, 255
Aleurites tribola, x, 100
Alexandria senna, xv, 285
Algaceæ, xi, 98; xiv, 164
Algæ, xi, 121; xvi, 203; xvii, 166
Algaroth's powder, xvii, 227
Alizarin, x, 169; xv, 263
artificial preparation of, xvii, 267
Alkalies, x, 181; xi, 161; xii, 176; xv, 208
organic, xv, 197, 240
and their compounds, x, 129; xii, 120
of insoluble substances, xiv, 186
Alkaline citrates dissolve metallic oxides, xii, 154
earths and earths, x, 130, 181
Alkaloids, xi, 167; xiii, 132; xvi, 205, 258
in aconite, xvii, 214
and their combinations, xi, 148
cinchona, xvii, 258
general notices concerning, x, 165
in cinchona, estimation of, xiv, 161, 189
in oil, xi, 63
of ipecacuanha, xvii, 265
of coca, ix, 113

Alkaloids of hydrastis, &c., x, 241
opium, xvii, 260
organic, x, 136, 162, 186; xii, 128, 158, 180
preparations of, x, 165
qualitative analysis of, xii, 180
quaternary, x, 163
reaction of, x, 165
separation of, xvii, 265
solanaceæ, xvii, 264
sublimation of, xiii, 134; xvi, 258
strychnos, xvii, 260
tests for, x, 229, 238; xiv, 191
Alkanet root as a test, xvii, 224
Alkapton, x, 173
Alligator sclerops, x, 125
Alloxan, xi, 169
Allyl, sulphide, xv, 255
Allylene, xvi, 272
Almond oil, adulteration of, xii, 80
Aloe, x, 119; xiv, 193
socotrina, xi, 195
zanzibar, xi, 96
Aloes, xi, 178; xiii, 115; xvi, 329
glycerolatum, xi, 63
Aloin preparation and characters of, ix, 162
Aloisol, xv, 255
Alstonia constricta, xi, 93
Althææ decoctum, x, 72
Alum, ammonio-ferric, xiv, 250; xv, 215
Alumen exsiccatum, ix, 99
Alumina, x, 132; xi, 163; xii, 143, 177
acetate of, xv, 230
determination of, xiv, 186
estimation of, x, 148, 182
hypochlorite, x, 131
in soap, xiv, 153
sulphate of, xi, 122; xv, 213
Aluminæ et potassæ sulphas, xii, 122
Aluminates, xi, 121
Aluminium, x, 148; xi, 121; xii, 143; xiv, 174; xv, 213; xvii, 217
behavior to chlorides, xiii, 123
leaf, ix, 108
preparation of, xiii, 123
Alums, soda, x, 148
Alumni Association of Philadelphia College of Pharmacy, delegates, xiii, 18; xiv, 17; xv, 18; xvi, 18; xvii, 18
Alumni Association of Philadelphia College of Pharmacy, delegates admitted, xiii, 20
Amanites, xv, 191
Amarantaceæ, x, 107
Amarantus, x, 107
Amaryllidaceæ, xv, 189
Amber, xii, 158; xvi, 206
camphor, x, 161
Ambræ tinctura, x, 74
American cantharis, x, 38, 228
Druggists' Circular, notice of, ix, 72
Journal of Pharmacy, notice of, ix, 72
opium, xv, 80, 378
pot and pearl ashes, analysis of, ix, 109
publications on chemistry and pharmacy, xv, 127
Amendments to the constitution, xii, 30; xvii, 87, 116
Amendments to the constitution adopted, xii, 45; xiii, 34, 68; xiv, 25, 61, 65; xv, 53, 56, 57
Amendments to the constitution proposed, xiii, 26, 64; xiv, 24, 60; xv, 22, 38, 56
Amendments to the drug law proposed, x, 39
American and European aconite compared, xi, 196
sulphuric acid, arsenic in, xi, 255
works, x, 60
Amides pyrophosphoric, xvi, 218
Amines, xvii, 257
Ammonia, x, 145, 181; xi, 163; xv, 210
acetate of, xii, 76
benzoate, x, 134
bicarbonate of, x, 119
chlorothaliate, xiv, 185
elixir of valerianate, x, 75
engine, xiv, 146
fixing of, x, 175
impurities of, xiv, 183
liquid, xi, 119
liquor acetatis, x, 130
nitrate from nitrous oxide, xiv, 169
phosphomolybdate of, x, 152
production of, xii, 149
pyrogallate of, xvii, 214
salts of, xi, 120
sulphate of, x, 146
preparation of, xiv, 174

Ammonia, test for, xiv, 186; xvii, 214
valerianate, xiii, 135
volcanic, xiv, 169
Ammoniacal fumes, xi, 120
Ammoniacum, sources of, xi, 175
Ammoniaci extractum acet., x, 76
Ammoniated copper, xv, 218
Ammonio-chlorides of mercury, xi, 127
ferric alum, xiv, 250; xv, 215
Ammonium, x, 145; xv, 210; xvii, 210
amalgam, xiv, 174
bromide of, xiii, 119
chloride of, xi, 119; xii, 140; xv, 211
derivatives, xi, 148
fluoride, xvi, 208
iodide of, x, 130, 146; xi, 119; xii, 140; xiii, 135; xiv, 76, 245; xv, 211
isolation of, xiv, 174
sulphide of, xv, 211
sulphocyanide of, xi, 129; xii, 140; xv, 228
Amphibia, x, 125
Amygdalæ amaræ aqua, x, 68
syrupus, x, 79
Amygdalus communis, x, 103; xi, 82; xii, 101
Amyle nitrite, xii, 128
Amylene, x, 254
Amylic alcohol, x, 160; xi, 134
ether, xvi, 270
oxide, x, 160
nitrite of, xv, 250
Amyloid substances in liver, xii, 170
Amyris elemifera, xvi, 183; xvii, 183
Anacardiaceæ, x, 104; xi, 84; xii, 98, xiv, 189; xv, 174; xvi, 179
Anacahuite wood, x, 104
Anæsthesia and anæsthetics, ix, 95
Anæsthetics, xiii, 137
Analysis of cacao, xv, 353
commercial phosphoric acid, ix, 113
crab orchard salts, ix, 113
inorganic, x, 177
of Kousso, ix, 123
milk, x, 171
ashes, xv, 147
organic, x, 184; xvi, 146
elementary, xv, 146
Analysis, quantitative, without H S, xvi, 146
spectral, x, 177; xvi, 146
Tokay wine, ix, 122
volumetric, xvi, 147
Analytical apparatus, x, 90
chemistry, xi, 157; xii, 174
Anchoic acid, xi, 138
Anderson, James H., decease of, xv, 28
Anecdotes of Cavendish, ix, 237
Anemone, xiv, 157
ludoviciana, x, 90
Anethole, xv, 254
Angelicic acid, xv, 233
Angræcum fragrans, xv, 188
Anhydrous protochloride of iron, xv, 216
sulphuric acid, preparation of, ix, 106
Aniline blue, xii, 159; xv, 246; xvi, 266; xvii, 257
derivatives, xi, 148
dyes, xii, 159; xvii, 159
Aniline, xiii, 132
black, xiii, 132
Anilina, x, 162; xi, 155; xii, 159; xv, 246; xvi, 264
constitution of, xii, 159
estimation of, xii, 159
sulphas, x, 137
Animal and physiological chemistry, xi, 169
drugs, x, 123; xi, 98
oil, x, 124
Anisomeria drastica, xvi, 192
Annual report of Pres. Colcord, ix, 9
Kiersted, x, 18
Procter, xi, 26
Moore, xii, 26
Gordon, xiii, 30
Stearns, xv, 24
Milhau, xvi, 29
Parrish, xvii, 29
Annulator, x, 126
Annonaceæ, xiii, 110
Answers to queries, ix, 31; x, 30; xi, 36; xii, 36
Anthracene, xi, 131; xvi, 274
Anthemidis extractum fluidum, x, 76
Anthemis nobilis, ix, 95; x, 111; xv, 182

Antiaris toxicaria, xii, 112; xv, 188; xvi, 197
Anti-cholera pills, xv, 161
Antidotes, silicates as, xiii, 119
Antilymphatic wine, x, 175
Antimoniate of potash, x, 153
Antimonii iodidum, x, 153; xi, 103
oxy-iodidum, xi, 103
sulphidum nigrum, x, 126, 133
Antimonium, xi, 102
Antimoniuretted hydrogen, ix, 100
Antimonious sulphates, xvii, 227
Antimony, x, 127, 153; xiii, 127; xv, 223; xvi, 237
antidotes to, xvii, 226
apparatus for detecting, xvii, 228
determination of, xv, 223
estimation of, xii, 179
manufacture of, xi, 126
mirror of, xii, 149
ore of, xiv, 178
pentachloride, xiv, 178
reaction, xvii, 226
reduction of ferric salts by, xvii, 225
sulphurets of, x, 89
Antiseptic liquid, Pennes's, xvi, 167
Antozone, xiv, 167
Ants' eggs, xv, 42, 274
Apelaic acid, xi, 138
Apis mellifica, x, 125; xii, 117; xiv, 165; xvi, 204
Apium petroselinum, xi, 76
Apocynaceæ, xi, 92; xii, 109; xv, 184; xvi, 192; xvii, 170
Apomorphia, xvii, 260
Apothecaries' balance, paper on, xii, 49, 316
Apparatus, xii, 70; xiv, 144; xv, 138, 327; xvi, 143; xvii, 136, 292
analytical, x, 90
and general observations, x, 159
and processes, x, 87
for displacement, xv, 149
determining the alcoholic strength of wines, xii, 72
detection of antimony, xvii, 228
gas-heating, xiii, 180; xiv, 146
for estimating H S in crude gases, xv, 141
gelatine capsules, xii, 73
Apparatus for inflaming silicated hydrogen, xv, 141
mineral water, xvi, 376
on exhibition, xv, 140
stirring, xv, 140
for small operations, x, 201
testing coal oil, x, 207
vacuum, xiv, 145
Appendix to report of Committee on Drug Market, xv, 289, 307
Appendix to report on progress of pharmacy, x, 191
Application, Frankine's, for burns, x, 85
of dialysis, xii, 174
of blowpipe, xv, 147
for membership, form of, xi, 281; xii, 325
of insoluble silicates, xv, 149
to ulcers, Guibert's, x, 86
Appointment of committee on scientific queries, xii, 53
Apricots, oil of, xiv, 191
Aqua ammoniæ, xvii, 213
amygdalæ amaræ, x, 68; xi, 62; xii, 74
aurantii flor. dest., x, 69; xiv, 148
camphoræ, xiii, 153
cinnamomi, xiii, 67
laurocerasi, x, 69; xii, 75; xiv, 148
mineralis, xi, 63, 100; xiv, 165
nicotianæ, xvi, 155
oxygenata, xi, 101
rosæ, xii, 74
St. Johannis, x, 85
Aquifoliaceæ, x, 108; xiv, 161; xvi, 189
Arabian manna, ix, 92
Araceæ, x, 120; xvi, 202
Arachis hypogœa, xvi, 181
Arachnides, x, 126; xi, 100
Areometer scales, xiv, 146
Araliaceæ, x, 95; xi, 76; xv, 179; xvi, 178
Arariba rubra, x, 110
Arbutine, x, 165
Arbutus unedo, x, 107
Arctostaphylos uva ursi, x, 107
Areca catechu, xi, 95
Argemone Mexicana, xi, 75; xvi, 177
Argentic chloride, xvii, 215
dioxide, xvii, 214
Aristolochiaceæ, x, 107; xvi, 192

Arnica as an application to wounds, ix, 94
hair wash, x, 85
montana, x, 112; xi, 89
plaster, xiii, 109
tinctura, x, 73
Arnicin not an alkaloid, ix, 113
Aromatics, exotic, substitute for, xvii, 382
Aromatic radicals, xi, 130
sulphuric acid, xv, 171
syrup of rhubarb, ix, 104
wine, x, 74
Arrangement for keeping volatile oils, xv, 109
Arrowroot, x, 38; xiv, 192; xv, 197
adulteration of, xiii, 115
demand for, xv, 283
remarks on, x, 39
varieties of, x, 212
Arseniates of iron, xv, 216
soda, xi, 126
strychnia, xi, 151
sub-, xi, 151
morphia, xi, 151
zinc, xv, 193
pyro and meta, xii, 149
Arsenic, x, 152, 183; xi, 164; xvi, 210, 237
apparatus for detecting, xvii, 228
detection of, xvii, 228
eaters of Styria, ix, 129
ether, xvi, 268
error in Marsh's test for, xii. 177
in artificial manures, ix, 126
hydrargyro-iodide of, x, 152
hydride, xii, 148
in bismuth, xi, 126; xiv, 187
in sulphuric acid, xi, 255; xii, 148
in trisnitrate of bismuth, ix, 128
iodide of, x, 152
methods for detection of, xvii, 229
sublimates, ix, 129
sulphides, formation of, xvii, 228
testing for, xii, 177
Arsenical colors, x, 191
pigments, xvii, 229
Arsenicum, xv, 222
Arsenious acid, x, 152; xi, 125; xv, 223
Arseniate of strychnia, xi, 151
sub-, xi, 151
Arseniuretted hydrogen, poisoning by, xii, 148
Artanthe elongata, xii, 110
Artificial respiration in poisoning, xvii, 262
formation of ammonia, ix, 114
fruit essences, xv, 167
formation of tartaric acid, ix, 117
ivory, xv, 150
light, xiv, 155
mineral waters, x, 69
tannin, xv, 150
Artemisia absinthium, xi, 89; xii, 106
santonica, x, 112
Articles, miscellaneous, on exhibition, xv, 327
Arts and manufactures of Japan, ix, 106
Artocarpus incisa, xi, 84
integrifolia, xii, 112
Arum dracunculus, xi, 96
maculatum, x, 120
Asagræa officinalis, xv, 190
Asarum Canadense, xvii, 382
europæum, x, 107
Asbestos bath, xiv, 146
Asclepiadaceæ, x, 117; xi, 93; xv, 185
Asclepias contrayerva, xv, 185
syriaca, x, 117
tuberosa, x, 117
Asparagin, xi, 146; xv, 260
Asparageæ, xvii, 167
Asphaltum, xvii, 48
Aspidium filix mas, xi, 96
Aspirator, xi, 59; xvi, 144
Assafœtida, xvi, 323
adulteration, xv, 43
resin, xv, 257
source of, xv, 257
syrup, x, 79
Assay balances, xii, 174
of distilled waters, ix, 102
French brandy, xii, 291
opium, ix, 170
sherry wine, xii, 296; xiv 78, 269
virgin scammony, xi, 214
whiskey, xii, 294
Assessment, special, on all members, xiii, 73, 83; xiv, 30
Assimilation of plants, x, 175
Associations, pharmaceutical, x, 193, 194
Atherosperma moschatum, x, 94.
Atmospheric air, liquids dissolving, xii, 134

Atmospheric air, carbonic acid in, xii, 134
Atomiser, xiv, 145
Atriplex hortensis, xvi, 192
Atropa belladonna, x, 113; xi, 92; xvi, 192; xvii, 171
Atropia, chemical reactions of, ix, 116; x, 163; xi, 151; xv, 244
decomposition of, xii, 162
from American grown belladonna root, ix, 166
glycerinea solutio, x, 70
method of applying, xii, 89
paper, xi, 70
sulphate of, x, 137; xi, 152; xiii, 132
test for, xii, 162
Attachment, lamp-heating, x, 88
Attfield, letter from Dr. John, xiii, 145.
Auditing committee appointed, ix, 21; x, 24; xi, 34, xii, 33; xiii, 41; xiv, 56; xv, 33; xvi, 40; xvii, 38
Auditing committee, report of, ix, 43, x, 27; xi, 36; xii, 35; xiii, 49; xiv, 67; xv; 57; xvi, 46; xvii, 44
Aurantiaceæ, x, 99; xv, 175
Aurantii flor: aqua dest., x, 66
Austrian Apothecaries' Association, letter from, xiv, 68, 198
Automatic vacuum apparatus, xiv, 145
Aves, x, 118, 124
Avoirdupois weight, x, 67
Azadirachta indica, xvi, 181
Azelaic acid, xi, 138
Azobenzole, xvi, 273

Babcock, J. F., on beeswax, xv, 92, 372
iodide of ammonium, xiv, 76, 245
Baccharis confertifolia, xvi, 188
Bache, Dr. F., death of, xii, 22
Bacobotrys picta, x, 90
Bakes, W. C., on plasters, xii, 230
Balance, assay, xii, 174
for apothecaries, xii, 316
without weights, xii, 318
Balmer, James, deceased, xiv, 20
Balsamaceæ, xi, 85
Balsaminaceæ, xv, 174
Balsam gurjun, xi, 162
of Peru, xvi, 323
botanical source of, ix, 93
tolu, xiii, 112; xvi, 323
Balæna mysticetus, x, 124
Baptisia tinctoria, x, 104; xii, 99
Bark, bayberry, xii, 204
bicolorata, x, 110
calisaya, xiii, 114
cinchona, xiii, 114
larch, xiii, 115
oabig, xiii, 110
sacred, xiii, 112
Barks, xi, 283
Barii chloridum, x, 130
Barium, x, 146; xi, 120; xv, 211; xvi, 222; xvii, 215
chloride of, xiii, 122
cyanide of, x, 155
fluosilicate, xvi, 217
Barringtonia speciosa, xii, 177
Baryta, x, 127
alcoholate, xvi, 267
carbonate of, x, 146; xvi, 222
caustic, xi, 120
formiate, x, 156
permanganate of, xii, 141
salts, poisonous effects of, xii, 169
sulphate of, xii, 141
Bartlett, N. Gray, vacuum apparatus, xiii, 197
Bases, organic, xv, 240
from putrefaction of animal matters, x, 165
Basic sulphate of magnesia, xi, 121
Bassia flowers, ix, 92
Bath, fomenting and vapor, xvi, 144
Baume tranquille, x, 85
Bavarian pharmacopœia, ix, 74
Bayberry bark, xii, 204
Bay water, xv, 283
Beans, Calabar, xiii, 112, 113
Beau's metrorrhagic pills, x, 82
Bebeerinæ sulphas, xv, 197
Becquerel's gout pills, x, 82
Bedford, P. W., on buchu leaves, xi, 211
corks, xvii, 358
apparatus for regulating temperatures, xiii, 155
gas heating apparatus, xiii, 180
morphia, strength of opium, xvi, 392
report of corresponding sectary, xii, 187; xiii, 144

Bedford, P. W., on Smyrna opium, ix, 169
syrupus lactucarii, xvi, 399
Beef-tea, xiv, 149
Beer yeast, xiv, 181
Beeswax, xv, 372, xvi, 204
with Japan wax, xiv, 193
paraffine, xiv, 189
Beet sugar, xvii, 244
Behavior of drugs to alcohol and water, ix, 102
volatile oils to polarized light, x, 162
Beindorf's apparatus, x, 89
Belladonna, x, 179
extract plasma, x, 84
radicis, x, 76
Benne plant, its culture, ix, 224
oil of, x, 204
Benzine, x, 160; xii, 152
as an insecticide, xiii, 129
liniment, xii, 85
Benson's, Dr., whooping cough mixture, x, 80
Benzoic acid, xi, 141
and some benzoates, ix, 124
yielded by sublimation, ix, 103
Benzoin, cones of, x, 82
in ointments, xv, 77, 151, 385
market, xv, 284
tincture of, xv, 387
Benzoinated lard, xiv, 46, 224
ointments, xv, 151
Benzole, xv, 253; xvi, 272
from coal naphtha, pure, ix, 121
Benzoyl, xiv, 181
Benzylic alcohol, xi, 135.
Berberidaceæ, xii, 95; xiv, 158
Berberina, x, 164; xii, 161
from Coscinium, xvi, 263
sulphas, x, 137
Berberis Darwinii, xvi, 172
Betacinchonia, x, 164
Beta vulgaris, x, 107
Beyran's wash, x, 65
Bibron's bromine mixture, xii, 85
Bicarbonate of ammonia, xi, 119
potassa, xi, 117
soda, xi, 118
Bichloride of tin, x, 151
Bichromate of potassa, x, 102
Bicolorata bark, x, 110
Bignoniaceæ, x, 114
Bile, xi, 170
Bile, acids of, xii, 170
in urine, xiii, 109
Biliary calculus, x, 174
Bilifulvin, xi, 172
Binoxide of hydrogen, x, 139
Biniodide of potassium, x, 144
Bismuth, x, 153; xvi, 210, 323
acetate, xv, 222
arsenic in, x, 126
citrate of, xiii, 126
and ammonia, citrate of, xiii, 126
cost of, xiv, 177
iodide of, x, 153
nitrate basic, xvii, 230
ore, xv, 193
oxide of, x, 133, 153; xii, 124
oxychloride of, x, 153
purification of, xvi, 237· xvii, 220
recovery from type metal, xii, 149
scarcity, xv, 42, 43, 283
separation of, xvi, 236
solution, xv, 165
subcarbonate, xii, 124
subnitrate, x, 133, 153; xi, 103; xii, 124, 222
adulterated, x, 236
ternitrate of, xi, 126
Bismuthic acid, xi, 126
Bitartrate of potassa, x, 157
Bitters rendered tasteless, xii, 93
Bixaceæ, xvii, 186
Bixa orellana, xvii, 186
Bixin, xvi, 282
Blatta Americana, xi, 100
Bleaching, xv, 144
effect of, on morphia, x, 210
Blistering paper, x, 85
Blood, x, 170; xi, 171; xv, 265; xvi, 285
analysis of, xii, 169
coagulation of, x, 170; xii, 169
electricity of, xii, 169
new test, xvii, 269
stains, x, 170
Blow-pipe, xiv, 146; xv, 147; xvi, 148
Blue bottles in dispensing, x, 68
pill, xiv, 152
Bœhmeria nivea, xvi, 197
Boiling-point of liquids, x, 67
Boldoa aromatica, xvi, 198

Boletus laricis canadensis, x, 22; xii, 115
Bones, x, 170
crushed, x, 177
Books, xv, 327
English, x, 62; xi, 52
French, x, 63; xi, 59
German, x, 64; xi, 53
on exhibition, xvi, 377
Boracic acid, x, 180
in California sea-water, ix, 127; xi, 160
Borate of lime, x, 127
Borax, xv, 193, 206
lime, xi, 102
Boric ether, xvi, 267
Boronatro calcite, xi, 102
Boron, x, 127, 140; xiv, 172; xv, 206
Bos taurus, x, 123; xii, 116
Bottles for poisons, xii, 92; xv, 83, 390
volatile oils, xv, 109
Bougies, xii, 90
Boundau, xv, 185
Bowdichia major, x, 103
Bowers' glycerin, ix, 102
Brandy, xv, 198
assay of French, xv, 291
California, analysis of, xiv, 63
California, examination of, xiv, 78, 267
H. F. Fish on, x, 210
reactions of, xii, 78
strength of, xiii, 222
substitute for, xii, 257
Brassica oleracea, xv, 173
Brass, iron in, xiv, 176
Brayera anthelmintica, x, 102
Brazilin, xvi, 283
Brewer, William A., report on drug market, xv, 267
Bridges, Prof. Robert, on southern prickly ash bark, xii, 270
Brine of Saginaw, xiv, 76
utilization of, xiii, 143; xv, 150
Bringhurst, Ferris, on oxides of iron used in medicine, xi, 253
Bringhurst, Ferris, on pill machines, xv, 108, 375
Bringhurst, Ferris, yellow wax in ointments, xvi, 416
Bromeliaceæ, xvi, 200
Bromide and iodide of potassium, ix, 106
Bromide, xii, 121, 136
Bromides, xvi, 216
tests for, xvii, 198, 199
Bromine, x, 143, 181; xii, 120, 136; xiii, 119; xv, 195, 283; xvii, 197
action on sugar, xiii, 118
elimination of, xiv, 185
from the Saginaw brines, xiv, 76, 243
and iodine, x, 181
solvents and tests, x, 181
test for, xvi, 215
with chlorine, estimation of, xii, 176
Brominium, xi, 101
Bromoform, xi, 133
Brown mixture, ix, 103
Brucia, chemical reaction of ix, 113; x, 151
Bryonia alba, xi, 76
Buchu, xvi, 325
leaves, comparative value of varieties of, xi, 211
Bufo cinereus, x, 125
Bullock, Charles, on sulphate of ammonia as a source of ammonia preparations, ix, 113
Bullock, Charles, on veratrum viride, xv, 360
Bumping of fluids, xvii, 139
Bunsen burner, xvii, 137
Burettes, x, 90; xvi, 144
Burgundy pitch, xv, 283
Burseraceæ, xvii, 183
Business committee, ix, 9; x, 29
appointed, x, 29; xi, 41; xii, 53
elected, xiii, 44; xiv, 38; xv, 39; xvi, 44; xvii, 40
Butalamin, xvi, 247
Butea frondosa, xi, 84; xv, 177
Butter adulterated, x, 190
in milk, estimation of, x, 172
of cacao, xv, 108, 347
test for copper, xii, 145
Butyric acid, x, 156; xi, 136
ether, xvi, 267
Buxus sempervirens, x, 100
Buxina, x, 164
Byttneraceæ, x, 98; xv, 97

Cabinet of geology, xvii, 422
Cacao Berbice, ix, 206
Bourbon, ix, 206
butter, xv, 108, 347
medicated, xv, 152
Caracas, ix, 205
Cayenne, ix, 206

Cacao, enemies of, ix, 200
Guatemala, ix, 205
Guayaquil, ix, 206
harvest of, ix, 201
history of, ix, 190
Jamaica, ix, 206
Maranham, ix, 205
minor, ix, 189
planting and culture of, ix, 198
Soconusco, ix, 204
Surinam, ix, 206
theobroma, ix, 189
Cachana, xvi, 186
Cachou aromatique Italienne, x, 82
Cadmii iodidi ung., x, 83
Cadmium, x, 150, 183; xi, 123; xiv, 217
alloys, xiv, 177
ferrocyanide, xvi, 241
preparation of, xiv, 177
sulphate of, x, 150
Cæsium, x, 144; xi, 118; xii, 139; xiv, 174, 175
Caffeidina, xii, 161
Caffein, as an antidote to opium, ix, 129
Caffeina, x, 187; xi, 150; xv, 244
arsenias and acido tanno-arsenicum, x, 132
Caïncin, xi, 146
Cajeput, oil of, x, 162
Calabar bean, xiii, 112
Caladium esculentum, xvi, 202
Calamus root, on the preparations of, ix, 97
Calamus, for insects, xii, 92
Calceolaria arachnoidea, xvi, 190
thyrsiflora, xvi, 189
Calcis carbonas, xi, 103, 121
et ferri phosphas, xi, 103
Calcium, x, 146; xii, 141; xiii, 121
carbonate, xvii, 255
chloride, xvi, 223
fluoride, xv, 212
iodide, xi, 120
oxide, pure, xiv, 175
phosphate, xvii, 215
phosphide, xv, 241
reactions with, x, 146
sulphide, xv, 211; xvi, 223
Calisaya bark, xiii, 114
percolation of, xiii, 214
Calculi, x, 174
Calophyllum inophyllum, xvi, 192
Calotrophis gigantea, xi, 93
Hamiltonii, xi, 93
Calquoin's caustic paste, xiv, 156
Calx chlorinata, xi, 102
Camphene, xi, 131
Camphenes, x, 131
Camphor, x, 67, 106, 138, 161; xi, 179; xv, 256; xvi, 194, 276, 324
Camphor, action of nitric acid on powder, xii, 158
Camphor ice, xv, 151
new way of powdering, ix, 177
patchouly, xvii, 255
price of, xv, 283
refining, xvi, 195
solubility, xii, 212
Camphora officinarum, xii, 110
Canadian Pharmaceutical Society, xvi, 26
Candidus P. C., comp. elix. taraxaci, xvii, 395
Cane, sugar, x, 165, 172.
conversion into glucose, xvii, 243
decomposition, xv, 259
difference from beet sugar, xvii, 244
purification, xv, 258
test, xv, 258
Canella alba, xi, 77
Canellaceæ, x, 97
Canelleæ, xi, 77
Cannabis indica, xi, 85
emulsion of, x, 80
resin of, xii, 244
sativa, x, 105; xii, 112
Cantharidin, xiv, 190; xv, 262; xvi, 257
in different parts of the Spanish fly, ix, 99
Cantharis vesicatoria, x, 125; xii, 118; xv, 192
Caoutchouc and gutta percha, xi, 304
mineral, xvii, 190
Capping bottles with gelatine, xiv, 147
Caprifoliaceæ, x, 111; xii, 102; xv, 180
Capronic acid, xi, 137
Caprilidene, xvi, 275
Capsicum, xv, 184
Capsules, copaiba and cubebs, xii, 90
Caramel, xi, 144; xv, 259
Carbohydrates, xi, 143; xii, 163
and allied compounds, x, 165
Carbohydrides, xii, 151
synthesis, x, 130
Carbohydrites, x, 131
Carbohydrogens, x, 138

Carbolic acid, xi, 136; xv, 197, 236; xvi, 90, 94, 119, 206, 429; xvii, 234
as a disinfectant, ix, 118
Carbon, x, 140; xi, 160; xii, 135; xiii, 117; xiv, 169; xv, 206; xvi, 219
bichloride, xiv, 166; xv, 208
bisulphide, xii, 120; xvi, 220; xvii, 195
oxychloride, xvi, 220
sulphides, xv, 207
tetra-chloride, xvi, 207
varieties of, xvii, 195
Carbonate of baryta, x, 146
copper, x, 150
iron, effervescing, x, 68
lime, xi, 103, 121
potassa, x, 144; xi, 106
soda, x, 145
Carbonates, xvi, 221
Carbonic acid, x, 140; xi, 101, 159
oxide by vegetation, xii, 173
Carbonitrogen compounds, x, 155
Cardamom, xi, 180
Cardamoms, xi, 194
Carduus benedictus, xi, 89
Cardui benedicti, ext. fluid, x, 77
Carminates, reactions of, xiii, 137
Carmine, x, 190; xvi, 281
adulteration of, ix, 123
Carney, Charles T., on citric acid, ix, 150
death of, xi, 24
on paraffine, ix, 163
presentation of likeness of, xiii, 68
remarks on sale of poisons, ix, 56
report of Executive Committee, ix, 41
report on home adulterations, ix, 130
report on specimens, ix, 45
Carnis ext., x, 77
Carotine, x, 169; xv, 260
Carrageen, production of, in New England, ix, 165
Carrara marble, x, 127
Cartilage, x, 171
Caryophyllin, preparation of, ix, 119
Carypha pumos, ashes of, ix, 124
Casein, soluble, xvii, 268
Cassia, x, 104; xiv, 160
fistula, xii, 100
obovata, xvi, 182
Cassius, purple of, xvi, 238
Cassuvium pomiferum, xi, 84
Castanea vesca, xiv, 163
Castor fiber, x, 123
Castoreum, xvii, 188
Castor oil, xv, 272, 285
bolus, xvi, 161
plant for silkworms, ix, 90
purification of, ix, 101
tasteless, xii, 91
Castile soap, xi, 183; xv, 197
Castilloa elastica, xv, 188
Casuaria equisetifolia, xvi, 198
Cataplasms, xii, 290
Catawba wine, tartar from, xv, 377
Caulophyllum inophyllum, xi, 79
thalictroides, xi, 72; xii, 96
Caustic, black, xvi, 152
for carious teeth, x, 87
lunar, xvi, 152
Cauteries, xv, 151
Cauterizers, x, 87; xii, 80
Cavendish, memoir of Hon. Henry, ix, 225
Cedrelaceæ, x, 98; xi, 78
Cedrela febrifuga, x, 98
Celastracea, x, 100; xi, 80
Cellulose, ix, 116; x, 172
Cement, xii, 71; xiv, 155; xv, 149; xvi, 150; xvii, 152
Chinese, xvi, 149
for metals, xvi, 150
microscopic objects, xii, 91
rooms, xiii, 140
Cephaëlis ipecacuanha, x, 110; xi, 87
Cerasus padus, x, 103
Cerata, unguenta, &c., xi, 68
Cerates, ointments, and plasmata, x, 83
Ceratum cantharides, ix, 98
cetacei, x, 84; xv, 387
plumbi, x, 84
subacet., xv, 387
simplex, xi, 61
Cereal, effect of age on grains, xii, 173
fungus growth on, xii, 115
Cerii oxalas, x, 131; xiv, 150
Cerium, xiv, 175
didymium, lanthanium, x, 147
lanthanium, didymium, x, 182
separation of, xvi, 225

Certificate of membership, xiv, 31
alteration of, xvi, 104
fee for increased, xv, 72
granted W. S. Laycock, x, 89
mistakes in, xiv, 66
proposition for, x, 89
Cetacei ceratum, x, 93
Chalybeate, cod-liver oil, ix, 101
water, aerated, x, 69
Changes in volume in dissolving salts, ix, 99
Chapin's herb cutter, xiii, 187
Chapman's spine bag, x, 68
Charcoal, x, 207
as a hæmostatic, xvi, 208
granular, xvi, 163
oxidation by, xvi, 149
powdered, xii, 73
spontaneous ignition, xvi, 219
Charta sinapinata, xvi, 162
Chelidonium glaucium, x, 93
Chelidoninic acid, ix, 123
Chelidonium majus, x, 93; xi, 75; xii, 96
Chemical change, xvii, 141
news, notice of the, ix, 73
polarization of oxygen, ix, 106
outfit for a pharmaceutist, x, 200
processes, remarks on some, xiv, 78, 248
reactions of strychnia, ix, 128
stoneware, x, 89
Chemicals, xvi, 374
medicinal, x, 128; xii, 120; xv, 194
on exhibition, xv, 319
Chemist and Druggist, notice of, ix, 73
Chemistry, agricultural, x, 174; xii, 172
analytical, xii, 174; xiv, 182
animal, xvii, 268
applied to the arts, xvii, 129
Chemistry, electro, xvii, 130
experimental, xvi, 149
inorganic, xiii, 117; xiv, 166; xv, 199; xvi, 211; xvii, 190
of the cosmos, xvii, 126
organic, xiii, 128; xiv, 175; xv, 227; xvi, 239; xvii, 127
of pepsin, ix, 114
pharmaceutical, xvii, 128, 190
physiological and pathological, x, 169; xii, 168; xiii, 137
vegetable, xii, 172; xv, 266; xvi, 285
Chemists' Association, Montreal, xvi, 18
Chenopodiaceæ, x, 107; xi, 86; xii, 109; xvi, 193
Chenopodina, xvi, 264
Chenopodium album, xii, 109
anthelminticum, xv, 66
quinos, x, 107
vulvaria, xi, 86
Chestnut leaves in whooping-cough, x, 236
Chicago College of Pharmacy, ix, 67; x, 193; xi, 174
Chicory substituted for taraxacum, xvii, 79
Chilblains, remedies for, xii, 91
Chimaphila umbellata, analysis of, ix, 124
Chinese moss, ix, 94
Chinogene, xv, 254
Chinoline, xi, 168
Chinovin (cinchonic red) a glucoside, ix, 121
Chloral hydrate as an anæsthetic, xvii, 254
Chlorate of potassa, xi, 102, 115
Chlorates, x, 136; xii, 136; xvii, 197
Chloric ether, ix, 97
Chloride of ammonium, xi, 119
gold and auro-chloride of sodium, ix, 105
potassium, x, 144
silver, xi, 127
sodium, x, 145
Chlorides, xii, 120
alkaline, xvii, 197
precipitation of, x, 115
Chlorinated ether, xvii, 267
lime, x, 147
Chlorine, x, 147; xi, 114, 161; xii, 136; xiv, 203; xvi, 215

Chlorine, action on sugar, xiii, 118
antidote to, xvi, 208
elimination, xiv, 185
in hypochlorite of lime, x, 181
manufacture of, xiii, 118
production of, xvii, 191, 196
spec. gravity, xvii, 196
test for, x, 181; xvii, 199
water, xiv, 172
with bromine, estimation of, xii, 176
Chlorinium, x, 129
Chlorocarbon, xiv, 166
Chlorocyanogen, xv, 229
Chlorodyne, ix, 99; x, 80; xiii, 107; xiv, 154; xvi, 160; xvii, 147
Chloroform, x, 136, 160; xi, 133, 189; xii, 127; xv, 197, 249; xvi, 269
constitution, xvii, 237
examination, xvii, 238
liniment, x, 86
medicinal, spec. grav. of, xiv, 78, 264
mixture, x, 80
new literature of, xvii, 237
preservation of, xiii, 128
solubility of alkaloids in, ix, 99
solutions in, x, 71
test for alcohol and ether in, xvii, 239
Chloroformi glycerolatum, x, 63
mistura, x, 70
syrupus, x, 79
Chloroformatum creasotum, x, 86
Chloroformique elixir, x, 75
vin, x, 74
Chlorophylle, x, 168; xi, 146; xiv, 181; xv, 263
Chloropicrin, xii, 156
Chlorsulphoform, xvi, 221
Chocolates, xii, 90
Cholagogue, x, 80
Cholera drops, xv, 158
pills, xv, 161
Cholepyrrhin, xiii, 138
Cholesterin, x, 172; xi, 146; xii, 164; xvii, 236
Cholina, xi, 170
Chondrus crispus, xvii, 166
Chorizanthe peduncularis, xvii, 193
Chiococca densifolia, xi, 87
Chromates, composition of, xi, 125; xii, 124, 147
Chromic acid in granular ophthalmia, ix, 95
Chromic chromate, x, 151
oxide, x, 183; xi, 126, 164; xii, 146
salts of, xii, 147
Chrome green, xii, 140
red, xii, 146
yellow, xii, 146
Chromium, x, 151; xiii, 124
alum, xvii, 216
in iron, xiv, 185
sesquioxide, xvi, 228
supersulphide of, x, 152
Chromocyanogens, xv, 229
Chromogenes, x, 168; xv, 263
Chrysophane, xvi, 280
Chrysophanic acid, x, 86, 140
Cibotium Cumingii, x, 121
Cichorium intybus, x, 113
Cicuta virosa, x, 180
Cigarettes, medicated, x, 69
Cimicifuga, extract, x, 77
fluid, x, 77
racemosa, x, 92
seeds, xiii, 186
Cinchona, x, 109; xi, 88, 180; xiv, 160; xv, 180; xvi, 186
alkaloids, muriate of, test for, xiii, 133
and sulphur, xvi, 154
assay of, xvii, 174
calisaya, xi, 89; xii, 102
root bark, xii, 192
culture in Algeria, xvii, 174
California, xvii, 174
East Indies, xvii, 172
Jamaica, xvii, 174
Cinchona ferrated tincture, x, 73
forests in South America, xii, 104
formation of alkaloids in, xii, 105
in Ceylon, xii, 104
Jamaica, xii, 104
Java, xii, 103
leaves, xiii, 114
preparations of, xii, 104, 206
quinia in, xii, 105
succirubra, xi, 89
valuation of, xii, 105
Cinchonaceæ, xiii, 114
Cinchonas, xiii, 130
Cinchonia, x, 164
effect of H on, xv, 244
Cinchotannic acid, removal of, xiv, 46

Cincinnati chosen as the place of next meeting, xi, 36
College of Pharmacy, ix, 67; x, 193; xi, 174
Cinnamates and nitro-cinnamates, x, 156
Cinnamic acid, xi, 141
Cinnamodendron corticosum, xi, 77
Cinnamomum, xvii, 182
Citrate of magnesia, xiv, 51
granular, x, 68; xiv, 51
soluble, xiv, 149
Citrates, alkaline, xii, 154
Citric acid and its adulterations, ix, 150
Citrine ointment, ix, 97, 98
Citrolactate of iron elixir, x, 75
Citrullus vulgaris, x, 96
Citrus bigaradia, xv, 175
limetta, xv, 175
limonum, xv, 175; xvi, 178
lumia, x, 99
oil of, x, 161
medica, xvii, 182
Cladophora glomerata, xi, 98
Clamp spring for burettes, xv, 141
Clarification of honey, x, 78
Claviceps purpurea, xvii, 165
Clay, fine, xii, 88
Cleaning glasses and capsules, ix, 96
Clency, W. F., deceased, xiii, 29
Close, George C., conia and its salts, xvi, 95, 415
emp. picis c. canthar., xiv, 42, 206
essay on conium, xi, 200
on chestnut-leaves, x, 236
remedy for epilepsy, xiii, 139
Cloves, fluid ext., deposit in, xvi, 79, 385
oil of, x, 162
Clupea harengus, xi, 100
Coagulation of human blood, x, 170
Coal gas, x, 190; xi, 129
waste products of, xvi, 152
oil, test for, x, 206
tar, preservation of wood by, xii, 152
preservative properties, xiii, 132
Coating of metals, x, 81
pills, xiv, 146
Cobalt, xiii, 126; xv, 216
estimation, xvii, 225
Cobalt, separation of, xiv, 187
sulphate, xv, 216
sulphides, xvi, 228
Coca, ix, 92; x, 81
erythroxylon, ix, 182
Cocaina, x, 164; xi, 81
Cocculus palmatus, xii, 95; xvi, 178
Coccus cacti, x, 126
carica, xvi, 204
Cochineal, xvii, 188
coloring, xiii, 108
Coddington, Mr., remarks on the sale of poisons, ix, 50, 56
Cod-liver oil, xi, 99
adulteration, xv, 272
emulsion, xv, 157
iodoferrated, xv, 158
jelly, x, 81; xi, 70; xii, 85
pills, x, 81
supply, xv, 285
Coffea arabica, xii, 81; xv, 181; xvi, 187
containing kinic acid, x, 110
Coffee, adulteration of, x, 189
Coffeina, x, 187; xvi, 187
solution in chloroform, xvi, 166
Colby, W. F., on honey and its adulterations, xv, 341
Colchici, ext. saccharatum, x, 77
seminis vin, x, 74
tinctur., x, 73
Colchicia, xv, 245
Colchicein, xiv, 164
Colchicine, x, 167; xv, 99, 363; xvi, 263
Colchicum autumnale, xii, 114; xiv, 164
root, xi, 180
seed, xi, 180
flu. ext., xii, 81; xiii, 204
percolation of, xiii, 204, 211
Colcord, S. M., act of incorporation, ix, 11
on adulterations, ix, 12
remarks on subject of alcohol, ix, 25, 26
remarks on internal revenue law, xiii, 85, 87, 91; xiv, 114
remarks on printing reports before presentation, ix, 35

Colcord, S. M., reports on sale of poisons, ix, 13
report of pres't, ix, 9
on drug market, xv, 279
on Sunday trade, ix, 14
U. S. Pharmacopœia, ix, 13
Cold, intense, x, 66
production of, xvii, 141
Coleus Verschaffelti, xvii, 214
Collection and preservation of plants, ix, 91
Collection and preservation of botanical specimens, ix, 94
of specimens at World's Fair, x, 192
of taraxacum, time for the, ix, 98
Colleges of Pharmacy, x, 191, 193
Colleges of Pharmacy, Chicago, xii, 46, 47, 187; xiii, 147; xiv, 17, 200; xv, 18; xvi, 18; xvii, 18
Colleges of Pharmacy, delegates, ix, 1, 2; x, 9, 10; xi, 19, 20; xii, 17; xiii, 17; xiv, 17; xv, 18; xvi, 17; xvii, 18
College of Pharmacy, Cincinnati, ix, 2; xi, 20; xii, 17, 186; xiii, 17, 147; xiv, 17, 200; xv, 13; xvii, 17
College of Pharmacy, Kansas, xvii, 18
College of Pharmacy, Maryland, ix, 2; x, 10; xi, 20; xii, 17, 184; xiii, 17, 147; xiv, 17, 200; xv, 18; xvi, 17; xvii, 25
College of Pharmacy, Massachusetts, ix, 1; x, 9; xi, 19; xii, 17, 184; xiii, 17, 146; xiv, 17, 197; xv, 18; xvi, 17; xvii, 17.
College of Pharmacy, New York, ix, 1; x, 9; xi, 19; xii. 28, 185; xiii, 17, 146; xiv, 17, 199; xv, 18; xvi, 17; xvii, 17
College of Pharmacy, Philadelphia, ix, 1; x, 9; xi, 19; xii, 17, 185; xiii, 17, 146; xiv, 17, 199; xv, 13; xvi, 17; xvii, 17
College of Pharmacy, St. Louis, xii, 28, 187; xiii, 17, 148; xiv, 17, 200; xvii, 18
Collodion, x, 71; xi, 63; xv, 164
application of, new, ix, 100
ferrated, xi, 63
sinapic, x, 71
vesicating, x, 71
Collodium, xvi, 206; xvii, 46, 48, 144, 407
Collodium, caustic, xiv, 156
cotton, xiv, 156
Colloids, xvii, 144
Collyria, x, 86; xii, 88, 289
Collyrium of bromide of potass., xii, 88
tannin, xii, 88
Colocynth, researches on, ix, 118
Colocynthin, x, 138
Coloring matter, xi, 146; xvi, 281
principles, xvii, 266
Color of flames, x, 169
flowers and leaves, xi, 155
wine, x, 169
Colors arsenical, x, 191
Combustibility of tobacco, ix, 90
Commercial creasote, x, 160
varieties of arrowroot, x, 207
Committee on adulterations, ix, 44, 131
auditing, ix, 21; x, 24–27; xi, 34; xii, 33; xiii, 41; xiv, 56; xv, 33; xvi, 40; xvii, 38
report of, ix, 43; x, 27; xi, 35; xii, 35; xiii, 66; xiv, 67; xv, 57; xvi, 45; xvii, 44
on arrears, xii, 41; xiii, 49
report of, xiii, 49, 81
business, x, 29; xi, 41; xii, 53; xiii, 44; xiv, 38; xv, 37; xvi, 41, 44; xvii, 25, 39, 431
certificate of membership, xi, 41; xii, 42; xiii, 41
code of ethics, xvi, 93–102
credentials, ix, 1; x, 9; xi, 19; xii, 17; xiii, 17; xiv, 17; xv, 16; xvi, 17; xvii, 17
drug market, x, 28, 44; xi, 40; xii, 33; xiii, 43; xiv, 32, 38, 41; xv, 34; xvi, 41; xvii, 40
Committee on drug market, report of, xii, 187; xiii, 43, 48; xv, 40, 267; xvi, 45, 287; xvii, 27, 79

Committee on election of members, xi, 41
examiners' law, xvi, 53, 75
Committee, executive, ix, 18; x, 23; xi, 31; xii, 29; xiii, 43; xiv, 37; xv, 34; xvi, 46; xvii, 39
Committee, executive, report of, ix, 4–7; x, 13, 16; xi, 22, 26; xii, 19, 25; xiii, 23, 30; xiv, 20, 21; xv, 27, 28; xvi, 21, 22; xvii, 21, 22
Committee on exhibition of specimens, ix, 45; x, 35; xi, 36, 42; xiii, 57, 94; xiv, 45, 67; xv, 67; xvi, 57, 371; xvii, 41, 120, 284
Committee on internal revenue law, xiii, 96; xiv, 32, 50, 67; xv, 86, 309
membership, report of, xii, 34
legislation, xvi, 101, 109
Committee on legislation, report of, xvi, 98, 329
Committee of nine to secure attendance at St. Louis, ix, 41
Committee, nominating, ix, 4; x, 17; xi, 26; xii, 25; xiii, 30, 43; xiv, 28, 37; xv, 22, 33; xvi, 25, 40; xvii, 25, 38
pharmaceutical law, report of, xvii, 26, 51
pharmacopœia, xi, 43
Committee, pharmacopœia, report of, xiv, 81; xvi, 25; xvii, 28, 41, 298
Committee on photographs, xvi, 97, 101
to prepare address to Prof. Ehrenberg, xvi, 106
on president's address, xvii, 35, 76
on progress of pharmacy, ix, 19, 65; x, 16, 49; xi, 32, 49; xii, 35, 56; xiii, 43, 97; xiv, 32, 40, 139; xv, 34, 123; xvi, 25, 41, 44, 129; xvii, 39, 41, 123
on proposed constitutional amendments, xvii, 26, 45
on renewal of prescriptions, xvi, 70, 96
on sale of poisons, ix, 63
Committee on sale of poisons, discontinued, xi, 35
Committee on subjects for investigation, ix, 59; x, 35; xi, 40, 43; xii, 49, 53; xiii, 43, 77; xiv, 41, 70; xv, 36, 116; xvi, 41, 120; xvii, 39, 93
Committee on suspended list, x, 24
unofficinal formula, xvi, 32, 71, 93
volunteer papers, xii, 49, 54
Comminution, xii, 280
Compensation for recording secretary, xiii, 34
treasurer, xiii, 36
Compositæ, x, 111; xii, 106; xiii, 114; xiv, 161; xv, 182; xvi, 187
Composition of vegetable gums, ix, 122
Compounds of carbonitrogen, x, 155
cyanogen, x, 133
inorganic, x, 123; xii, 120
organic, x, 133; xii, 125
protein, x, 169
Conamarin, xvi, 185
Concussions, xvi, 148
Condensation, fractional, xiv, 144
Condensers, x, 88
Cones of benzoin, x, 82
camphor, x, 82
iodine, x, 82
oxide of zinc, x, 82
stramonium, x, 82
tar, x, 82
tolu, x, 82
Confection of cinchona and sulphur, xvi, 154
senna, xii, 348; xvi, 154, 464
Confections, xii, 85, 287
Conia and its salts, xvi, 95, 413
Coniferæ, x, 118; xii, 113; xiii, 115; xvi, 199
Conium, maculatum, xvii, 180
properties of, xvi, 85, 185, 459
Conserves of chocolate, xii, 90
Constitution, ix, 244; x, 249; xi, 275; xii, 321; xiii, 227; xiv, 283; xv, 415; xvi, 475; xvii, 438
new, proposed, xvii, 431
Consumption of opium, ix, 93
Contamination of American sulphuric acid with arsenic, xi, 255
Convallaria majalis, xvii, 167
Conversion of malic and tartaric acids in succinic, ix, 120
Convolvulaceæ, x, 109; xi, 87; xii, 108; xv, 184; xvii, 171

Convolvulus scammonia, x, 109; xvii, 171
turpethum, xiv, 162
Cooking without fire, xiii, 141
Copaiba, x, 81; xiv, 154, 192; xvi, 182
improving taste of, ix, 103
Copaifera, xi, 83
species, xvii, 184
Copaine, Mege de Jozeau, xv, 159
Copernicia cerifica, xvi, 202; xvii, 187
Copper, x, 150, 170; xv, 218
amalgam, xi, 127
ammoniated, xv, 218
arsenic in, xii, 144
blowpipe reactions of, xii, 144
bronze, xii, 144
carbonate of, x, 152; xvi, 231,
chromate of, xv, 163
detection of, xvi, 230
estimation of, xii, 178, 179
in the sea, xiv, 177
non-metallic impurities in, xii, 144
oxalate of, x, 156; xi, 137
oxide of, x, 150
plants, xi, 154
powder, xi, 123
pure, xii, 144
quadrantoxide, xii, 144
quadruple salt, xii, 145
salts, basic, xv, 218
suboxide, xii, 145
sulphate of, x, 157
as a cauterizer, xii, 89
Coptis teeta, xi, 71
trifolia, xi, 71
Cordia Boissieri, xi, 90
Cordiaceæ, xi, 90
Coriariaceæ, xi, 81; xii, 100
Coriaria myrtifolia, xii, 100
ruscifolia, xi, 81; xii, 100
thymifolia, xii, 100
Coridina, xi, 149
Corkwood, xvi, 324
Corks, xvii, 358
Cornaceæ, x, 96
Cornelian cherry, ix, 94
Corn plaster, x, 85; xvi, 162
Cornus florida, x, 98
mascula, xi, 76
Corresponding Secretary authorized to procure foreign periodicals, xi, 36
Corrosive sublimate, xv, 196, 224
Cortex Winteranus, xi, 72
Coryamyrtin, xv, 262
Corydalia, x, 164
Corydalina, xv, 243
Coscinium fenestratum, xvi, 174
Cotton fibres, xvi, 277
gun, x, 168
root and seed, discussion on, xiv, 43
seed oil, x, 85, 237; xiv, 191
Coumarin, xvi, 280; xvii, 255
in liatris odoratissima, ix, 117
Counterpoise on shop scales, xv, 109;
Court plaster, x, 85
Coutarea latifolia, xvi, 187
Cowric resin, ix, 95
Cream, blue color of, x, 172
of tartar, adulterated, xv, 43, 46, 85
from American wines, xv, 84
in wines, xii, 180
pure, xv, 85
purification, xv, 84
Creasote, xiv, 182; xv, 196, 236
commercial, x, 160
gargles, Dr. H. Green's, x, 86
solidified, x, 86
test for, xvi, 257
Creasotum chloroformatum, x, 86
uses of, x, 134
Crême de bismuth, xv, 157
Crescentia edulis, x, 116
Cressman, N., deceased, xiii, 28
Crocus sativus, xi, 95; xii, 113; xv, 186
Crop of oil of peppermint, xiii, 221
Cratægus coccinea, x, 103
Croton cascarilla, xi, 79
draco, xvi, 197
eleuteria, x, 99; xi, 78
erythræma, x, 99
humilis, xv, 186
lineare, xi, 79
lucidum, xi, 79
Sloanei, xi, 79
tiglii, x, 100; xiii, 111
Croupee oil, ix, 92
Crucibles, platina, xiv, 183
Cruciferæ, xi, 77; xii, 97; xv, 173; xvi, 177
Crushed bones as manure, x, 177
Cryolite, xvi, 209
uses of, xv, 44, 81, 276, 402
Cryptogamic growths, xii, 115
Cryptopia, xv, 242
Crystallized carbonate of magnesia, ix, 111

Crystallization, xv, 142; xvi, 148
of phosphorus, xv, 204
Crystals in guaiac wood, ix, 114
preservation of, xvi, 149
in vegetable tissues, xii, 173
Cubeba officinalis, xi, 77
Cubebs, xiii, 112; xvi, 193, 323
diuretic principle of, xv, 93, 337
oleo-resin of, ix, 94
Cubilose, ix, 121
Cucurbitaceæ, x, 96; xi, 76; xii, 101; xiii, 110; xvi, 184
Cucurbita pepo, xii, 101
Culture of benne as an agricultural product, ix, 224
cinchona, xiv, 160
saffron, xiv, 76, 254
Cultivated wild plants for tinctures, x, 72
Cuminol, xv, 225
Cunila mariana, xv, 183
Cunningham, James E., deceased, xiii, 30
Cupric chloride, xi, 124
oxide, xi, 123
Cupri oxidum, x, 135
sulphatis plasma, x, 85
Cupuliferæ, x, 105; xi, 84; xiii, 112; xiv, 163
Curarin, xiv, 180
Curcuma longa, xi, 94
Curcumin, xv, 263
Cuscuta monogyna, xv, 184
Cyanates, xvi, 241
Cyanide of barium, x, 155
iridium, x, 155
osmium, x, 155
platinum, x, 155
rhodium, x, 155
zinc, x, 155
Cyanides, xvi, 240
test for, xii, 125
Cyanogen, xi, 166
production of, xvi, 239
compounds, x, 133; xii, 125; xv, 227; xvi, 239; xvii, 256
Cyanin, xv, 246
Cyclamin, ix, 122
Cymol, xv, 255; xvi, 275
Cyphomandra betacea, xvii, 171
Cypripedium pubescens, xv, 189
Cytisus laburnum, xi, 83; xv, 177
Cytisin, xiv, 180

Dacrydium cupressimum, xv, 188
Dalleochine, x, 163
Damara australis, xv, 188
Dangerous inflammable liquid, xvii, 142
Daphne mezereum, xi, 86
pillu, xvi, 195
Daphnine, x, 167
Datura stramonium, xi, 91; xii, 108; xiv, 162
tatula, xii, 108; xiv, 162
Davenport's invitation to the Marine Hospital, xiv, 28
Deadened skin, removal of, x, 167
Death of James H. Anderson, M.D., xv, 28
Dr. Franklin Bache, xii, 22
Sir David Brewster, xvi, 131
from carelessness, ix, 126
careless use of hair dye, ix, 129
chloroform, ix, 124
poisons, ix, 124
of W. F. Clency, xiii, 29
John E. Cunningham, xiii, 30
Dr. John Davy, xvi, 131
Prof. Daubeny, xvi, 131
John P. Dodge, xi, 25
Louis M. Emmanuel, xvii, 22
Michael Faraday, xvi, 131
Thomas Farrington, xv, 27
George B. Fish, xiv, 20
Richard Forester, xiii, 80
M. Guibourt, xvi, 131
William Herapath, xvi, 131
H. E. Hill, xvii, 22
F. L. John, xiii, 28
Henry King, xv, 28
James B. Lane, xv, 27
William B. Little, xv, 28
William Longshore, Jr., xiii, 29
William McCulloch, xvi, 131
John McDonald, xiii, 30
Matteucci, xvi, 131
John Mawson, xvi, 131
Dr. E. Mayer, xvi, 131
John Meakim, xii, 23
William J. Olliffe, M.D., xiv, 21
Dr. C. G. Page, xvi, 131
L. Phillips, xiii, 29
James L. Polhemus, xv, 28
Dr. Stephen Procter, xvi, 131
J. Lindley Pyle, xiv, 20
E. M. Randall, xvi, 131

Death of Dr. Thomas Richardson, xvi, 132
F. Rollman, xiii, 28
Earl of Rosse, xvi, 132
Jesse M. Sands, xv, 28
Harman D. Scully, xy, 28
Dr. George G. Shumard, xvi, 132
Edwin R. Smith, xvii, 22
Thomas A. Sweetzer, xv, 27
Dr. R. P. Thomas, xii, 24
H. A. Vogel, xvi, 132
Richard Warrington, xvi, 132
G. W. Weyman, xii, 23
Daniel F. White, xiii, 29
G. C. Wilson, xiii, 28
Samuel H. Woods, xvii, 22
F. Zchensner, xvi, 132
Decease of members, x, 15; xi, 23
Decentra formosa, xi, 75
Decimal weights and measures, xiv, 33
Decoctions, xii, 77, 285; xvi, 155
and infusions, x, 71
phosphates, xiii, 117
Decoctum althææ, x, 72
dulcamaræ, xvii, 327
hæmatoxyli, xvi, 327
sarsaparillæ comp., xv, 98, 339; xvi, 155
Decoloration of syrup of sesquichloride of iron, ix, 102
Decomposition of chloride of ammonium by boiling, xii, 148.
Decomposition of carbonic acid by red-hot copper, ix, 107
Decomposition of sulphate of zinc, ix, 109
Decomposition of vapors at high temperatures, xi, 119
Defence of Mr. Stearns's action, xvii, 101
Definite compounds of sesquioxides and sesquichlorides, ix, 107
Definition of adulteration, ix, 130
Deflagrating flux, xiv, 183
Delegates to Ninth Annual Meeting, ix, 1, 2
Tenth Annual Meeting, x, 9, 10
Eleventh Annual Meeting, xi, 19
Twelfth Annual Meeting, xii, 17
Thirteenth Annual Meeting, xiii, 17
Fourteenth Annual Meeting, xiv, 17
Delegates to Fifteenth Annual Meeting, xv, 18
Sixteenth Annual Meeting, xvi, 17, 18
Seventeenth Annual Meeting, xvii, 17
International Pharmaceutical Congress, xiv, 70; xvi, 33, 76
Delegations, new, welcome to, xvii, 25
Delinquency of a Boston member, x, 39
Deliquescent perchloride of iron, ix, 96
Delphinia, xii, 163
Delphinium, x, 92
Dental pharmacy, x, 69
Dentifrice powder, xii, 74
Deodorizing animal fats, xvi, 151
petroleum, xiv, 147
and mineral oils, xii, 151
Deposit in tinct. of rhubarb, xvii, 97
of tinctures, x, 72
Depreciation of Smyrna opium, ix, 41, 169
Derivatives of cinnamic acid, xvii, 248
Description of a balance for apothecaries' uses, xii, 316
balance without weights, xii, 318
vacuum apparatus, xiii, 75, 197
Desiccation, xii, 280; xvi, 148
of glutinous substances, xvi, 148
Destruction of cinchona forests in South America, xii, 104
Detection of adulteration of Chinese rhubarb, ix, 105
alcohol in liquids, xvii, 233
alcohol in volatile oils, xii, 80
arsenic, xvii, 228
arsenical pigments, xvii, 229
artificially colored wine, xii, 79
chlorine, iodine, and bromine, xvii, 199
croton oil in mixtures, ix, 129
and estimation of phosphorus and phosphorous acid, ix, 107

Detection of fusel oil in alcohol, ix, 122
hydrocyanic acid, xvii, 256
metallic poison, ix, 127
methylic alcohol, xvii, 157
methylic alcohol in ethyl alcohol, xvii, 232
mercury in poisoning cases, xvii, 218
minute quantities of oil of mustard, ix, 123
morphia, xvii, 260
nitrates in water, xvii, 193
salicine, ix, 104
strychnia, xvii, 262
Determination of albumen and syntonin, ix, 120
antimony, xv, 223
grape sugar, cane sugar, and dextrine, ix, 117
nicotin in tobacco, ix, 120
nitrates in presence of nitrites, xiv, 186
picric acid in beer, ix, 121
quinia in Peruvian bark, ix, 117
sulphur in organic compounds, xvii, 202
tallow in wax, ix, 118
water in organic substances, xiii, 139
Deutoxide of lead, x, 151
Dextrine, xii, 166; xv, 258
and glucose for starch, x, 168
Diabetic urine, xiv, 193
Dialyser, xv, 141
Dialysis, xi, 169; xii, 72, 174, 264; xiii, 139; xv, 143
Dialyzed ferric oxide, xvii, 222
Diamides, x, 162
Dianium, ix, 110; x, 152
Diammoniac carbonate, xvii, 214
Diamonds, xv, 192, 207
Diatomic and bibasic acids, xvii, 250
monobasic acids, xvii, 250
Diazobenzole, xv, 253
Dibromo-coryamyrtin, xv, 262
thiosinnamide, xv, 248
Dicas, Liverpool hydrometer, ix, 42, 216
Dicentra formosa, xi, 75
Dichloracetic acid, xvii, 247
Dichloroxyphenyl-sulphuric acid, xvii, 236
Dichlor-phenol, xvii, 236
Dictamus albus, x, 102
Diehl, C. Lewis, Jr., on colchicum, xv, 99, 363
remarks on oleum ætheræum, xii, 309
remarks on some chemical processes, xiv, 70, 248
report on progress of pharmacy, xv, 123; xvi, 129, 286
syrupus senegæ, xv, 98, 342
Dietetical properties of phosphorus, xiii, 138
Didymium, cerium and lanthanum, x, 147
Didymium, cerium and lanthanum tests, x, 182
Digester, x, 88; xi, 59
Digitalin, x, 167; xi, 150; xii, 167; xvii, 246, 247
Digitalis, xiii, 114; xvi, 189, 413
examination, xvii, 172
purpurea, x, 114; xi, 91; xii, 107; xv, 183; xvii, 172
Differences between commercial creasote and carbolic acid, xvii, 234
Diffusion liquid, x, 148
Di-iod-acetone, xvi, 244
Dilute hydriodic acid, xii, 76
hydrocyanic acid, xiv, 251
Diluted milk, ix, 129
Dinitro-phenyl, xvii, 236
Diosma ambigua, x, 102
Dioxy-behenolic acid, xvi, 254
Diphenylamine, xv, 247
Dipteraceæ, xvi, 194
Directions about specific gravity, xvii, 303
Discourse on titles, xiv, 77, 257
Discussion about act of incorporation, xvi, 55
adulterations, x, 28

Discussion about adulteration of cream of tartar, xv, 47
adherence to pharmacopœia, xiii, 60
alcohol, ix, 24, 26
Alumni Association of Philadelphia College of Pharmacy, xiii, 18, 19
on alcoholic liquors, ix, 24
amending constitution, xiii, 69; xiv, 25, 26, 27, 61; xv, 53, 55
American wines, xv, 60
applications for membership, xiii, 69
benzine in place of ether in making oleoresins, xv, 94
bismuth, xv, 44
code of ethics, xvi, 103
cotton root, xiv, 43, 44
cryolite manufacture, xv, 45
culture of opium, xiii, 51
Diehl's paper on chemical processes, xiv, 78, 79
East River Medical Association's communication, xv, 113
ergot powder, xv, 63, 66
drug committee's report, xv, 41, 43
drug law, xvi, 46
economy in use of alcohol in percolation, xiii, 60
electing members, ad interim, x, 24
eligibility to membership, ix, 27, 28
Faber's paper, ix, 42, 43
finances of the Association, xvii, 116
gas heating apparatus, xiii, 82
German grown drugs, xiv, 57, 59
honey, xv, 61
hydrargyri cum cretâ, xvi, 78
Discussion on internal revenue law in reference to alcohol, xiii, 84, 94
internal revenue law committee, xv, 85, 90
lard, xiii, 54
law relative to pharmacy, xvii, 61, 71
law relative to medicines, xvi, 99
life membership, xv, 68
Neynaber's still, xiv, 60
new order of members, ix, 27
nominations, xiii, 45; xv, 35; xvi, 44
permanent secretary's compensation, xiii, 34, 35
and determination of place of next meeting, ix, 38; xi, 36; xii, 40; xiii, 75; xiv, 68; xv, 105; xvi, 110; xvii, 89, 92, 100
pharmacy act, xvii, 84, 86
poppy cultivation, xvii, 51
powdered ergot, xv, 63, 66
private formulæ, xiii, 59
query 14, on wood creasote, x, 37
printing of reports before submitting them, ix, 34, 36
proposed amendment, xiii, 69
to strike out, sign the constitution, xi, 46
pumpkin seed in tænia, xiii, 58
report of executive committee, ix, 8
revising roll of members, xiii, 70
revising pharmacopœia, xvii, 42, 43
saffron, xiii, 67
sale of poisons, ix, 48
suppositories, xiii, 66
secret preparations, xiii, 59
strength of liquors, xiii, 76
tariff, xvi, 72, 75

Discussion on tinct. ferri chloridi, xv, 95
variations from directions on pharmacopœia, even when results are the same, xiii, 60, 64
veratrum viride, x, 33
Whittemore's pamphlet, ix, 34
words pharmacist and pharmaceutist, xiv, 77, 78
Diserneston gummiferum, xi, 76
Disinfectants, ix, 88; xv, 145
Dismission of the subject of prizes, xi, 35
Dispensing potent medicines, and the proper precautions, x, 66
phosphorus, x, 203
Displacement, x, 88; xii, 283
apparatus, xv, 140
Dissociation, x, 119
Distillation, xv, 143
of coal, xii, 152
mixtures, xii, 70
Distilled spirits, x, 196
waters, x, 68; xii, 74; xiv, 148; xv, 152
preservation of, xii, 75
medicated waters, x, 68
and medicated waters, xvi, 155
waters, to restore slimy, xvii, 144
Distinction between morphia and papaverina, xvii, 261
Ditolylamine, xv, 247
Dix, John D., remarks on varieties of saffron, ix, 29
Doliber, Thos., on benzoinated lard, xiv, 46, 224
valerian, xiv, 57, 231
benzoin in ointments, xv, 385
Domestic drugs, xv, 278
Donations announced by treasurer, xv, 93, 121
from H. F. Fish, xiv, 56
S. M. Colcord, xv, 93
H. T. Cummings, xv, 93
Donnelly, Dr. E., on theobroma cacao, ix, 188
Donovan's solution, xv, 165
Dorema ammoniacum, xi, 75
Dorema assafœtida, xi, 75
Aucheri, xi, 76
aureum, xi, 76
glabrum, xi, 76
odoriferum, xi, 76
paniculatum, xi, 76
robustum, xi, 76
Doremus's, Dr. R. O., tender of rooms to convention, ix, 33
Dorstenia contrayerva, xi, 85
Double cased tin vessels for dried vegetables, x, 66
chloride of thallium and iron, xvi, 232
cyanides and cyanates of magnesia, xvi, 240
hyposulphates, x, 141
sulphocyanides of the alkaloids with the metals, xvi, 259
sulphocyanides of palladium, xvi, 243
Draft of a law proposed for Canada, submitted to the Association, xvii, 86
Drilling glass, xv, 149
Drimys Chilensis, xvi, 173
Drop and minim measure, ix, 105
Dropping machine of Salleron, x, 89
Dropsical liquid, x, 174
Drops for prevention of cholera, xv, 158
Drug business, scope of, xvi, 287
usage and laws of, xvi, 299
committee appointed, x, 28; xi, 40; xii, 53
committee excused from reporting, xiv, 41
Druggist, the, ix, 72
sundries, xvii, 292
Drug law committee continued, ix, 26
market, Baltimore, xv, 277
Boston, xv, 279
New York, xv, 270
Philadelphia, xv, 275
review, ix, 85, 87
reporter, notice of, ix, 73
Drugs, xvii, 285
animal, xii, 118; xiv, 165; xv, 192; xvi, 204; xvii, 186
at Paris Exposition, xvii, 189
classification of, xvi, 291
derived from animal kingdom, xii, 165; xvii, 186
derived from vegetable kingdom, xvii, 165
duty on, xv, 88, 289, 305

Drugs, extraction of, xvii, 137
extracts, yield of, xvii, 145
imported, quality of, xiv, 57
indigenous, xvi, 85, 459
inferior, sold by government, xv, 41
and medicines, recommended for admission into U. S. Pharmacopœia, xvii, 369
Mexican, xvii, 189
miscellaneous, xvi, 205; xvii, 189
on exhibition, xv, 219; xvi, 371
Panama, xvi, 124
supply and quality of, xvi, 323
trade, foreign and domestic, xvi, 295
rejected, xv, 305
vegetable, x, 90; xii, 95; xiv, 157; xv, 172; xvi, 172; xvii, 165
Dry crystals of valerianate of ammonia, ix, 101
Dryobalanops camphora, xvi, 194
Drying of adhesive substances, xii, 174
plants, xvii, 143
troches, xi, 69
Dugong oil, ix, 95
Duffield, S. P., on hypodermic injections, xiv, 237
pyrophosphate of iron, xvi, 403
properties of leaves of podophyllum peltatum, xvi, 417
relative proportion of digitalin in digitalis, xvi, 413
Dulcose, x, 166
Dunn, John A., on hydriodic acid, xvi, 78, 383
Dussart's method of detecting phosphorus, xvii, 207
Dutch publications, xv, 135; xvi, 142
Duties on drugs, xvi, 301, 320
of pharmaceutists, ix, 15
to cherish crop of medicinal plants, xii, 199
of permanent secretary, xiii, 36
Duvaua dependens, xvi, 179
Dyad metals, xvii, 215
Dyeing, xv, 144
Dyson, D. S., on oxalate of iron, xvii, 389
Early appointment of committee on specimens recommended, xvii, 41
Earths, xii, 122, 176
alkaline, xii, 122, 176
uses, x, 130
earths and alkalies, tests, x, 181
East River Medical Association, communication of, xv, 112
Eau d'Ornal, x, 74
de Pagliari, xv, 157
Easterbrook, R. B., deceased, xv, 21
Eberlé, C. S., on gelseminia, xv, 386
suppositories, xv, 400
Ebert, A. E., on sophistication of oil of amber, xiii, 149
exhibits specimens of extract of beef, xiv, 65
remarks on gillenia trifoliata, xiv, 56
Ebullition of water, xvii, 192
Echites Chilensis, xvi, 192
Economy in use of alcohol, xii, 72
Economy in use of alcohol in percolation, xiii, 60, 201; xiv, 147
Educational uses of museums, ix, 79
new remedies, x, 233
Effects of age upon grains of cereals, xii, 173
bleaching upon morphia, x, 218
drying on active principles of plants, xviii, 143
fat in arsenical poisoning, ix, 128
on laborers in quicksilver mines, ix, 107
lead on water for potable use, ix, 132
oil of wormwood, xiii, 114
phosphorus, x, 170
sugar on teeth, xiii, 136
Effervescent carbonate of iron, x, 68
Effervescing granules, xii, 163
powders, xii, 73
Eggs, x, 171
Egyptian opium, xvi, 175
Ehrenberg, Prof., address to, xvi, 126
jubilæum of, xvi, 104
Elæocarpus, xvi, 179
ganitrus, xvi, 179
Elæosacchara, xvii, 372
Elastic and sweet glue, xvi, 150
Elaterite, xvii, 190
Elaterium, ix, 91; xvi, 184
Elettaria cardamomum, ix, 94; xi, 94
Elaud's Boontyes, xv, 177

Election of H. W. Fuller local secretary, xvi, 121
members, ix, 2, 17, 30, 33, 43, 45; x, 10, 22, 26, 41; xi, 35, 40, 42; xii, 18, 29; xiii, 20, 37, 64, 76; xiv, 18, 37, 50, 76; xv, 67, 98, 99, 112; xvi, 93, 119; xvii, 46, 115
officers, ix, 19; x, 23; xi, 32; xii, 29; xiii, 43; xiv, 38; xv, 39; xvi, 44; xvii, 38
President, xiv, 38
and Vice President, x, 23
Electric machine, xiv, 145; xv, 140
with sulphur discs, xiv, 145
Electricity of the blood, xii, 169
Electrolysis, ix, 120
Electuaries, conserves, juices, pulps, and preparations of chocolate, xii, 90
Electuarium e sennâ, xvii, 371
Electuary of sulphur, xvi, 154
Elementary and inorganic analysis, xiv, 165
Elementary and inorganic substances, xi, 100
organic analysis when only C. H and O are present, xvi, 146
substances, report on, xi, 61
Elements of botany on natural system, ix, 80
classification of, xvii, 133
metallic, xiii, 120
non-metallic, x, 128, 138; xii, 120; xiii, 117; xvii, 190
Elemi from Sonora, xvii, 189
Eleventh Annual Meeting, xi, 19
Elixirs, x, 75; xv, 152; xvi, 156
Elixir aurantii compositum, xvii, 372
bismuth, xv, 172
calisaya, xvi, 156
iron and bismuth, xv, 153
ferrata, xvi, 156
chloroformi, xvi, 156
chloroformique, x, 75
cinchona ferrated, x, 75
cinchonæ ferro phosphoricum, x, 64
iron and bismuth, xvi, 156
Elixir, citrolactate of iron, x, 75
ferrated, of gentian, xv, 153
ferri pyrophosphatis, xvi, 156
horseradish, xv, 153
Elixir of iodide of iron and quinine, xv, 153
opium, McMunn's, xii, 77
pepsini comp., xi, 64
picis liquidæ comp., xvi, 157
taraxaci comp., xv, 395
valerianate of ammonia, x, 75; xiii, 177
Ellagic acid, xvii, 253
Ellershausen's process, xvii, 221
Ellis, E. T., on commercial varieties of arrowroot, x, 212
cryolite, xv, 80, 402
report on drug market, xv, 288
Ellwell on malpractice and medical evidence, ix, 79
Emanuel, Louis M., dec'd, xvii, 22
Emery, xiii, 141
Emetina, xi, 152; xvii, 265
Emilia rigidula, x, 113
Emplastra, xi, 67
Emplastrum adhesivum, x, 85; xi, 67
ammoniacum, xvii, 327
cum hydrargyro, xvii, 327
antimonii, xvii, 327
arnicæ, xii, 88
assafœtidæ, ix, 154; xvii, 327
belladonnæ, xvii, 152
calaminaris, xi, 67
cantharidis perpetuum, xi, 77
ferri, xvii, 327
gelatinæ, xi, 68
Peruvianum, xvi, 162
picis Burgundicæ, xvii, 327
Canadensis, xvii, 327
cum cantharide, xiv, 206
opii, x, 85
plumbi, x, 85
carbonatis, xi, 67
resinæ, xvii, 327
saponis, xvii, 327
stibiatum, xi, 63

Emulsions, xiv, 156; xv, 157
Emulsion of cannabis indica, x, 80
coal tar, ix, 104
cod-liver oil, xv, 157
pumpkin-seed, and male fern, xii, 84
tar, xv, 157
wax, x, 80
Enfleurage, xii, 79
English books, x, 62; xi, 52
periodicals, x, 54
publications, xvi, 134
Engiri opium, xvi, 175
Engraving glass, xv, 149
Ennomos subsignaria, xvi, 204
Entertainments at Chicago, xvii, 121
resolutions about, xvii, 112
Envelopes, wafer, xi, 81
Ephedra Americana, xvi, 189
equisetina, xi, 94
Epileptic remedy, xiii, 59
Epsom salts, on masking taste of, xvii, 382
Equivalent weights of magnesia and nickel, ix, 107
Erasine, xiv, 192
Erbium, non-existence of, xiii, 123
Ergot, xi, 97; xiv, 189; xv, 358; xvi, 201; xvii, 165
fluid extract of, xv, 63
powder of, xv, 64
Ericaceæ, x, 107; xi, 86; xvii, 172
Ericinon, ix, 113
Erigeron Canadense, xiv, 161
Erucic acid, xii, 154; xvi, 253
Erythræa centaurium, xi, 92; xii, 108; xiv, 162
Erythrin, xv, 264
Erythrite, xi, 145
Erythro-centaurin, xv, 261
Erythroxylaceæ, x, 101; xi, 80
Erythroxylon coca, ix, 182; x, 101; xi, 80
Escharotics, xii, 89
Eserin, xv, 243
Espy, James P., dec'd, ix, 71
Essay on erythroxylon coca, ix, 182
drugs and preparations officinal in Germany, recommended for adoption in U. S. Pharmacopœia, xvii, 48
and lectures of special interest, xvii, 280
on sassafras officinale, xiv, 211
special, ix, 146; x, 195
Essence of beef, xiv, 149; xv, 154
mace, xii, 77
Essence of mustard, xii, 77
scurvy grass, ix, 118
Essentiæ, xi, 64; xv, 167
Essential oils, xiv, 193, 194; xv, 285
examined with polariscope, xiv, 192
fuchsin as a test for, xiv, 194
on purity of, ix, 103
of valerian, ix, 118
Estimation of acids in salts, x, 178
alkaloids in cinchona bark, xiv, 161
bromine and chlorine, xii, 176
CO_2 in bicarbonates contained in natural waters, xvii, 193
chlorine and sulphur in caoutchouc, ix, 116
cobalt in presence of arsenic, xvii, 225
copper, xii, 179
ethyl nitrite in sweet spirits of nitre, xvii, 232
gases in mineral waters, xii, 175
hydrocyanic acid in bitter almond water, xii, 180
magnesia and fixed alkalies, ix, 107
potassa and soda, xii, 177
the quality of soap, xvii, 155
sugar, xii, 181
in urine, ix, 114
sulphur, xii, 179
sulphuric ether, xiii, 128
sulphuric acid in salts of the alkalies, xii, 176
sulphur in mineral waters, xiv, 183
tartaric and malic acids, xvii, 253
value of indigo, xvii, 266
Ether, x, 150; xi, 134, 187; xvii, 231
acetic, x, 150; xv, 248
chrysamic, xv, 249
displacer, xi, 59
estimating for, xiii, 129
of fatty acids, action of Na, xvii, 249
formic, xiv, 179

Ether, fortior, xi, 188
in dialysis, ix, 93
ozonic, xvii, 148
price of, xi, 187
solution in, x, 61
substitution of, xiv, 57, 208
tungstic, xv, 249
Ethers and alcohols, x, 135; xii, 127
compound, xvi, 267
hydrobromic and hydriodic, x, 160
Ethylamine, xv, 249
Ethylated benzole, xv, 253
Ethylene, xvi, 272
and homologues, xvi, 273
Ethyl and ethyl of potassium, xiv, 181
danger of preparing, xiv, 181
and diamyl-borate, xvi, 268
dimethyl-carbinol, xvi, 270
iodate, xvii, 231
monoborate, xvi, 268
nitrite, xvii, 232
triborate, xvi, 268
Ethylic alcohol, xi, 133; xvii, 231
mercaptan, xi, 134
oxide, xi, 134
nitrate of, x, 160
Ethylonic oxide, xi, 134
sulphides, xi, 134
Eucalyptus globulus, xvi, 177
resinifera, xv, 179
Eugenic acid, xi, 143; xv, 236
Euonymin, xi, 80
Euonymite, xi, 80
Euonymus atropurpureus, x, 100; xi, 80
europæus, xi, 80
Eupatorium, xv, 182
cannabinum, x, 111
incarnatum, xv, 400; xvi, 188
nervosum, xv, 182
salvia, xvi, 188
Euphorbiaceæ, x, 99; xi, 78; xii, 111; xiii, 111; xiv, 163; xv, 187; xvi, 196; xvii, 169
Euphorbia chilensis, xvi, 196
lathyris and peplus, x, 100
litchi, xii, 99
prostrata, x, 100
resinifera, xvii, 169
Euphorbium, xvi, 196
Euphorbon, xvi, 281
Examination of brandy and whiskey, xiv, 267
deposit from tinctura rhei, xvii, 396
Examination of extracts, x, 76
indigo, ix, 117
of potable and spring waters for organic impurities, xvii, 193
potato and rye whiskey, ix, 117
scammony, ix, 117
Exchange of Proceedings, xiii, 144, 145
from foreign societies, xiii, 46
received, xiv, 22, 23
of Canstatt's Jahresbericht, x, 26
Excipients, x, 81
Excretions, x, 173
Excretion of nitrogen, xii, 170
Excuses of absentees, x, 11
Excursion of Association, xiv, 77; xv, 121; xvi, 125
Executive committee directed to withhold proceedings from members who are three years in arrears, xii, 42
present certain names for honorary membership, xvi, 107
directed to print a larger number of reports on legal aspect of pharmacy, and report on drug market, xvi, 106
report of, ix, 4; x, 19; xi, 22; xii, 19; xiii, 23; xiv, 20, 21; xv, 27, 28; xvi, 21, 22; xvii, 21, 22
Exhibition of apparatus for filtering, xiii, 55
Chapman's spine bag, xiii, 68
gas heating apparatus, xiii, 82
metallic magnesium, xiii, 74
specimens, report on, ix, 45; x, 43; xi, 42;

xiii, 94; xiv, 67; xv, 318; xvi, 371; xvii, 284
Exhibition room ordered to be closed during the sessions, xvii, 41
Exogonium purga, xii, 108
Expenses of executive committee, x, 14; xi, 22; xii, 20; xiii, 25
permanent secretary, xiv, 23; xv, 30; xvi, 24; xvii, 23
publishing Proceedings, ix, 6; x, 14; xi, 22; xii, 20; xiii, 24; xiv, 55; xv, 32, 33; xvi, 39, 40; xvii, 37, 38
Experimental chemistry, xvi, 149
Experiments on oil of peppermint, ix, 101
with unbleached morphia, x, 218
on veratrum viride, x, 222
Explanations respecting queries, xvi, 17
of the report on legislation being printed, xvii, 27
Explosion of glass, x, 69
gun-cotton, ix, 98
hypophosphite of soda, ix, 98
oxalate of peroxide of mercury, ix, 99
Explosive mixtures, xvi, 152
Exports of petroleum, xvi, 297
from Baltimore, xv, 299
statement of, xvi, 319
Expressed oil of nutmegs, xii, 157
Expression of sentiment on Faber's paper, ix, 42
Expulsion of J. L. Hunnewell, x, 40
Frederick Stearns, xvii, 112
External remedies, report on, xi, 61
use of quinia, xii, 129
Extinction of native drugs in certain localities, xii, 198
Extracta, xi, 65; xiii, 327; xvii, 144
fluida, xi, 64; xvii, 146
new process for, xiii, 106
narcotic, xiv, 148; xv, 154; xvii, 145
Extracts, xi, 66; xii, 81, 286; xiv, 149; xv, 153; xvi, 157; xvii, 144
Extracts, narcotic, Grandval's, xvii, 144
value of, xiii, 133
Extracts, examination of, x, 76; xii, 81
from fresh herbs, xii, 81
improved by glycerine, xvii, 145
preparation and preservation of, x, 76
report on, xi, 61
testing of, xvii, 98
value of, x, 78
in vacuo, xii, 81
yielded by different drugs, xvii, 145
and fluid extracts, x, 76; xii, 81, 286
Extractum absinthii fluidum, xi, 233
achilleæ fluidum, xi, 233
aconiti folii fluidum, xi, 229, 246
radicis, xi, 226
aloes, xvii, 372
fluidum, xi, 240
ammoniaci aceticum, x, 76
anthemidis, fluid., x, 76; xi, 233
angusturæ fluid., xi, 230
arnicæ fluid., xi, 229
aromatic. fluid., xvi, 157
assafœtidæ fluid., æther, xi, 245; xvi, 157
of beef, xiv, 65, 149; xvi, 119; xvii, 145
belladonnæ, xi, 65
fluidum, xi, 229, 246
radicis, x, 76
buchu fluidum, xi, 227
calami fluidum, xi, 229
calumbæ fluidum, xi, 231
cannabis in gonorrhœa, ix, 93
purificat., xvii, 329
canellæ fluidum, xi, 227
capsici fluidum, xv, 227, 246
cardamomi fluidum, xi, 227
cardui benedic., x, 77
carnis, x, 77
caryophylli fluidum, xi, 227, 256
cascarillæ fluidum, xi, 65
catechu fluidum, xi, 241

Extractum chenopodii fluidum, xi, 227, 232
chimaphilæ fluidum, xi, 237, 246
chirettæ fluidum, xi, 231
cimicifugæ, x, 77
fluidum, x, 77; xi, 237, 242, 247
cinchonæ, xvi, 157; xvii, 329
comp., xvi, 157
fluid., xi, 238; xvi, 158; xvii, 320
aromat., xi, 65
comp., xvi, 158
cocci fluid., xi, 65
cocculi fluid., xi, 65
cod-liver oil, xiv, 152, 153; xv, 154
colchici sacchar., x, 77
radicis fluid., xi, 229, 247
seminis fluid., xi, 229; xii, 81
colocynthidis alcohol., xv, 154; xvii, 329
comp., xvii, 329
fluid., xi, 234, 247
conii, xvii, 330, 379
alcohol., xvii, 330
fluid., xi, 234, 247; xvii, 331
in gonorrhœa, ix, 93
cubebæ fluid., xi, 227, 247
resinos, xvi, 194
cypripedii fluid., xi, 227
digitalis fluid., xi, 234, 247
dulcamaræ, xvii, 330
fluid., xi, 236, 247; xvii, 331
epigeæ fluid., xi, 237
ergotæ fluid., xi, 234, 247; xv, 63; xvi, 158
erigerontis fluid., xi, 233
eupatorii fluid., xi, 231
filicis maris, x, 77
fuci vesiculosi, xi, 66
gallæ fluidum, xi, 236
gentianæ, x, 77
fluidum, xi, 231
Extractum geranii fluidum, xi, 236, 247
glycyrrhizæ, x, 77; xvi, 157
adulterated, xvii, 155
granati fructus corticis fluidum, xi, 236
radicis corticis fluidum, xi, 236, 247
hæmatoxyli, xvii, 330
helianthemi Canadensis, xvii, 147
fluidum, xi, 236
hellebori fluidum, xi, 229
humuli fluidum, xi, 231
hydrastis fluidum, xi, 231
hyoscyami fluidum, xi, 230, 247
ignatiæ alcohol., xvii, 330
ipecacuanhæ fluidum, x, 77; xi, 235, 247; xvii, 331
iridis fluidum, xi, 227
jalapæ, xvii, 330
aquosum, xii, 215
juglandis fluidum, xi, 238
juniperi fluidum, xi, 238
kino fluidum, xi, 241
krameriæ fluidum, xi, 241, 247
lactucæ virosæ, xi, 65
lappæ fluidum, xi, 231
leptandræ fluidum, xi, 65, 238
lobeliæ fluidum, xi, 235
lupulinæ fluidum, xi, 227
of malt, xi, 69
marrubii fluidum, xi, 233
matico fluidum, xi, 230, 247
of meat, xv, 154; xvi, 465
mezerei spirituosum, xvii, 372
myrrhæ fluidum, xi, 227
nucis vomicæ, ix, 99
alcohol., xvii, 330
fluidum, xi, 228
oleæ corticis, x, 77
opii, xvi, 330
fluidum, xi, 243
papaveris fluidum, xi, 231
pareiræ fluidum, xi, 231

Extractum phytolaccæ fluidum, xi, 231
pimentæ fluidum, xi, 228
podophylli, xvii, 330
prinos fluidum, xi, 231
pruni virg. fluidum, xvii, 331
pyrethri fluidum, xi, 228
quassiæ fluidum, xi, 231
quercûs fluidum, xi, 236
rhataniæ, ix, 105
adulterated, xvii, 181
rhei comp., xvii, 373
fluidum, xi, 239; xvii, 332
rhus fluidum, xi, 238
rosæ fluidum, xi, 65
Gallicæ fluidum, xi, 231
rosmarini fluidum, xi, 233
rubiæ fluidum, xi, 236
rubi fluidum, xi, 237, 248
sabadillæ fluidum, xi, 228
sabinæ fluidum, xi, 233
salicis fluidum, xi, 231
salviæ fluidum, xi, 233
sanguinariæ fluidum, xi, 233
sarsaparillæ, x, 78
fluidum, xi, 237, 248
fluidum, comp., xvii, 332
scillæ fluidum, xi, 230
scoparii fluidum, xi, 230
scutellariæ fluidum, xi, 232
seminis strychnos aquos., xvii, 373
senecion. fluidum, xi, 238
senegæ fluidum, x, 78; xi, 230
sennæ fluidum, xi, 239, 248
serpentariæ fluidum, xi, 232, 248
of soap bark, ix, 120
spigeliæ fluidum, xi, 239
et sennæ fluidum, xvii, 332
squillæ fluidum, xvii, 146
statices fluidum, xi, 237
stillingiæ fluidum, xi, 238
stramonii folii fluidum, xi, 230
tabaci fluidum, xi, 230
tanaceti fluidum, xi, 233
Extractum taraxaci fluidum, x, 78; xi, 233, 248
valerianæ, x, 78; xi, 66
fluidum, xi, 228
vanillæ fluidum, x, 78
veratri viridis fluidum, xi, 228; xvii, 332
xanthorhizæ fluidum, xi, 232
xanthoxyli fluidum, xi, 228
zingiberis fluidum, xi, 228, 248
Extracting silver from ores, ix, 106
Extraction of drugs, xvii, 137
and preservation of lard, xii, 208
of potash from marl, xi, 256
potato starch, ix, 121
sugar from beet roots, xv, 143

Fabarum St. Ignatii, tinct., x, 74
Faber John, on colocynth, x, 197
manufacturing pharmacy, ix, 210
phosphorus dispensing, x, 203
report on Paris International Pharmaceutical Congress, xv, 314
report on Third International Pharmaceutical Congress, xvii, 349
Fallu, xvi, 188
Faraday on physical forces, ix, 79
death of, xvi, 131
Farmar, R. A., dec'd, ix, 71
Farrington, Thomas, dec'd, xv, 29
Fat, x, 173
Fats, animal, xvi, 151
melting and solidifying points of, xvii, 143
Fat in seeds, xi, 157
urine, x, 172
rancidity of, xiii, 108
Fatty acids, xv, 238
alcohols, xvi, 271
oils, xvii, 148
Febrifuge draughts, Lavine's, x, 80
Fel Tauri, xvii, 373
Fermentation, x, 159; xi, 156; xii, 167; xv, 143
acetic, xiv, 179
of mucic acid, ix, 122
Ferments, xii, 167; xiii, 137; xvi, 283; xvii, 268
and fermentation, xiii, 137

Ferments, preservation of, xvii, 268
Ferrated collodion, xi, 63
elixir of calisaya, xvi, 156
cinchona, x, 75
Ferreira spectabilis, xvii, 184
Ferri albuminas, xii, 123
ammoniæ sulphas, xvii, 332
chloridum, xvii, 332
chloridi tinctura, x, 70; xiv, 78, 150, 250
et magnesiæ citras, xii, 124
potassæ tartras, x, 134; xi, 105
quiniæ citras, xvii, 333
iodidum, xii, 128
sulph., xii, 128
sesquichloridum, xi, 103
et sodæ pyrophosphas, xii, 123
ferrocyanidum, x, 133; xvii, 332, 334
iodidum, x, 81
iodidi glycerolatum, xi, 63
pilula, x, 81
syrupus, x, 79
lactas, xi, 105
oxidum dialysatum, xvi, 166; xvii, 222
hydratum, x, 132; xi, 103; xvii, 334
perchloridum, x, 131
perchloridi tinctura, x, 70
perphosphas, x, 132
persulphatis liquor, x, 69
picras, xi, 104
et potassæ tartras, x, 134
protochloridum, x, 131
protochloridi tinct., x, 70
pyrophosphas, xvii, 334
pyrophosphatis syrupus, x, 79
et quiniæ ammonio-citras, x, 137
citratis vin., x, 74
quiniæ sulph., xii, 128
et magnesiæ sulphas, x, 137
reductum, xvii, 334
sesquichloridum, xii, 103
strychniæque citras, xi, 107
subcarbonas, x, 132; xvii, 334
sulphas, xii, 123; xvii, 334
sulphidum hydratum, x, 132
vin. amarum., x, 74
zinci citras, xi, 105
Ferric chloride, xi, 122
formiate, xi, 136
oxide dialyzed, xvii, 222
oxide saccharated, xvii, 222
pyrophosphate, xvii, 224
sulphate, xi, 122
Ferric tannates, xi, 139
tartrate, xi, 139
of potassa, xi, 139
tartrates, xi, 139
Ferridcyanide of potassium, x, 156; xi, 129
Ferrocyanate of quinia, xvi, 261
Ferrocyanide of cadmium and potassium, xvi, 241
Ferro and ferricyanides of iron, xv, 227
Ferrocyanide of iron, x, 156
potassium, x, 155, 185
Ferrous iodide in scales, xvii, 225
oxalate, x, 156; xvii, 224
salts, xi, 122
Ferrous sulphate, xvii, 225
Ferrum, xi, 102
aceticum solutum, xvii, 373
redactum per hydrogen., x, 131
sesquichloratum solutum, xvii, 371, 373
Ferruretted hydrogen, x, 149
Fertilizers, x, 176; xi, 157
Ferula assafœtida, xi, 75
erubescens, xi, 75
Persica, xi, 75
teterrima, xi, 75
Feu belge (ol. morrhuæ vesicans), xi, 70
Feuillea cordifolia, x, 96
monosperma, x, 96
Fibrine, xvi, 284
coagulation of, xii, 170
Ficus carica, x, 105
doliaria, x, 105
elastica, x, 105
rubiginosa, x, 105
sylvestris, x, 105
Fidelity to the Pharmacopœia, xiii, 193
Figures and descriptions of organic remains, ix, 80
Filices, x, 121; xi, 96; xvi, 203
Filicic acid, xvi, 261
Filicis maris extr., x, 77
Filtered air, a preservative, x, 66
Filtering funnel, xv, 109
papers, xvi, 144
improvement of, ix, 103
Filtering through sand and glass, xvi, 149
Filter, xiv, 145
syphon, new, xvii, 137
Filters, x, 89
and filtration, xv, 109

Filtration, new instrument for, xiii, 178; xiv, 145
method of hastening, x, 89; xiv, 145
Financial affairs, xvii, 36, 115
Fine clay as a dressing to wounds, xii, 88
Fineness of powders, xvii, 306
Fish and marine animals, x, 177
Fish offal and marine fucus, x, 177
Fish, H. F., death of, xvi, 22
donation, xiv, 56
Fish, Henry F., on production of conium seeds in U. S., ix, 166
powdered camphor, ix, 177
coca, ix, 182
memoir of Hon. Henry Cavendish, ix, 225
Fish, Geo. B., death of, xiv, 21
resolution about place of meeting lost, ix, 29
Fitzroya Patagonia, xvi, 200
Fixing of ammonia, x, 176
Fixed oils, xii, 80; xv, 198
oil of pistacia lentiscus, ix, 91
Flavoring extracts, xiv, 150
Flax and cotton, x, 98
Flaxseed, x, 68
Flesh preserved in its raw state, xii, 94
Flora of South United States, ix, 81
Flores chamom. vulgaris, xvii, 373
Flores sulphuris, xii, 120
Flotovia diacanthoides, xvi, 188
Flour, bread adulterated with SO_3 copper, x, 189
Flowers, color of, x, 169
farms in France, xiv, 153
Fluid extracts, x, 76; xi, 64, 222; xii, 81, 286; xiii, 106; xv, 155; xvi, 157; xvii, 146
new process for, xiii, 106; xiv, 147
preparation of, xvii, 146
absinthii, xi, 233
achilleæ, xi, 233
aconite leaf, xi, 229, 246
root, xi, 226
aloes, xi, 240
angustura, xi, 230
Fluid extracts, anthemidis, xi, 233
arnica, xi, 229
assafœtida, xi, 245
aurantii cortic, xi, 233
belladonnæ, xi, 229, 246
buchu, xi, 227; xiv, 81; xv, 155
burdock, ix, 99
calami, xi, 229
calumbæ, xi, 231
canellæ, xi, 227
Fluid extract of cannabis, in gonorrhœa, ix, 93
cannabis, purif., xvii, 329
capsici, xi, 227, 246
cardamomi, xi, 227
cardui benedict., x, 77
caryophylli, xi, 227, 246
deposition, xvi, 79, 385
cascarilla, xi, 65, 229
catechu, xi, 241
and syrup of chamomile, ix, 104
chenopodium, xi, 227, 233
chimaphila, xi, 237, 246
chiretta, xi, 231
cimicifuga, x, 77, 227, 232, 247
cinchona, xi, 238, 247; xv, 155; xvi, 158; xvii, 320
cinchona aromaticum, xi, 65
cinchona comp., xvi, 158
cloves, deposit in, xvi, 79, 385
cocci, xi, 65, 242
cocculi, xi, 65, 245
colchicum root, xi, 229, 247; xii, 81
colchicum seed, xi, 229; xii, 81; xiii, 204
colocynth, xi, 229
conium, xi, 234, 247; xvii, 379
cubebs, xi, 227, 247

Fluid extract of cypripedium, xi, 227
digitalis, xi, 234, 247
dulcamara, xi, 236, 247
epigea, xi, 237
ergot, xi, 234, 247; xv, 63, 155; xvi, 158
erigeron, xi, 233
eupatorium, xi, 231
fucus vesiculosus, xi, 66
galls, xi, 236
gentian, xi, 231
geranium, xi, 236, 247
glycyrrhiza, xi, 242
granati peel, xi, 236
rad. cort., xi, 237, 247
helianthemum, xi, 236; xvii, 147
hellebore, xi, 236
hops, xi, 231
hydrastis, xi, 231
hyoscyami, xi, 230, 247
inula, xi, 227
ipecacuanha, xi, 235, 247
iris, xi, 227
jalap, xi, 227, 247
juglans, xi, 238
juniper, xi, 233
kino, xi, 241
krameria, xi, 241, 247
lappa, xi, 231
leptandra, ix, 102; xi, 65, 238
lobelia, xi, 235
marrubium, xi, 233
matico, xi, 230, 247
myrrh, xi, 227
nux vomica, xi, 228
opium, xi, 243
papaveris, xi, 231
pareira, xi, 231
phytolacca, xi, 231
pipsissewa, ix, 104; xi, 237, 246
podophyllum, xi, 228, 247
polytrichum junip., ix, 102
prinos, xi, 231
Fluid extract of prunus virginianæ, ix, 104; xi, 243
pyrethri, xi, 228
quassia, xi, 231
quercus, xi, 236
rhei, xi, 239
rhus, xi, 238
rosæ, xi, 65
gallicæ, xi, 231
rosmarini, xi, 233
rubiæ, xi, 236
rubi, xi, 237, 248
sabadilla, xi, 228
sabine, xi, 233
salicis, xi, 237
salvia, xi, 233
sanguinaria, xi, 235
sarsaparilla, xi, 237, 248
squill, xi, 230; xvii, 146
scoparius, xi, 130
scutellaria, xi, 132
senecio, xi, 238
senega, xi, 230
senna, xi, 239, 248
serpentaria, xi, 239, 248
spigelia, xi, 239
et sennæ, xi, 240
statice, xi, 237
stillingia, xi, 238
stramonium leaves, xi, 230
tobacco, xi, 230
tanacetum, xi, 233
taraxacum, xi, 232, 248
uva ursi, xi, 238
valerian, xi, 228
veratrum viride, xi, 228
wild cherry, ix, 104; xi, 243
xanthorrhizæ, xi, 232
xanthoxylon, xi, 238
zingiber, xi, 228, 248
Fluidity of oils, xii, 80
Fluo-chromate of potash, xii, 138
manganous acid, xvi, 218
Fluorescence, xii, 92; xvii, 258
Fluorides, xvi, 217
Fluoride of ammonium, xvi, 209
calcium, xv, 212

Fluoride of sodium, xvi, 222
Fluorine, x, 127; xii, 137; xvi, 217; xvii, 201
Fluosilicates, xvi, 217
Fluosilicate of barium, xvi, 217
Flux, deflagrating, xiv, 183
Fœniculum vulgare, x, 91
Foliage, action of, xv, 266
Form of application, xvi, 480
Formamide, xv, 247
Formation of alkaloids in cinchona, xii, 105
arsenic sulphides, xvii, 228
cellular tissue, xvi, 285
fuchsin, ix, 116
hydrochloric acid, xvii, 256
rootlets in willows, xvi, 285
roots of vegetables, xvi, 286
volatile alkaloids, xvi, 231
Fomenting and vapor bath, xvi, 144
Forester, Richard, death of, xiii, 30
Formiate of baryta, x, 156
Formic acid, xi, 136; xiv, 179; xv, 233; xvi, 246; xvii, 248
ether, xiv, 179
Formyli terchloridi spiritus, xi, 64
Fossil phosphates, x, 177
Fractional condensation, xiv, 144
Franguline, xvii, 24
Frankine's application to burns, x, 85
Franks' researches on volatile oils, xvii, 151
Frasera Walteri, x, 116; xvi, 191
Frauds in whisky making, xv, 308
Fraxineæ, xvii, 170
Fraxine, x, 167
Fraxinin and fraxetin, ix, 115
Fraxinus ornus, xvii, 170
Freckle wash, Hardy's, x, 85
Freezing mixtures, xiv, 154
point of water in capillary tubes, ix, 107
French books, xi, 57, 59
cement for microscopy, xii, 91
codex, revision of, xii, 59
law, ix, 128
periodicals, x, 54
publications, xv, 131, 132; xvi, 135
works, ix, 83, 84
wines and vineyards, and the way to them, ix, 81
Fricke, Dr. Charles, death of, ix, 71
Frigorific mixtures, xi, 71; xii, 70
Fritillaria imperialis, xi, 95
Fruit preservers' manual, ix, 80
syrups, xv, 167; xvii, 158
Fruits, respiration of, xii, 173
Fuchsine, xv, 247; xvi, 265
formation of, ix, 116
Fucus amansci, x, 122
vesiculosus, x, 121; xi, 98
fluid ext., xi, 66
Fuel for lamp, xv, 145
Fuller, Mr., declination of chairmanship of drug committee accepted and another name to be reported, xvii, 80
renominated, xvii, 100
Fulminate of mercury, x, 158
Fulminic acid, x, 158
Fumariaceæ, xi, 75
Fumaric acid, xi, 138
Fumarina, xv, 243
Fumigations, x, 82
Fumouze's essay on cantharides, xvi, 104
Fungi, x, 122; xi, 97; xii, 115; xiv, 164; xv, 191; xvii, 165
Fungous growths on stalks of cereals, xii, 115
Funnels, xv, 109
Furnaces, cheap, xv, 139
gas, xii, 71
and gas, x, 88
oil lamp, xii, 70
Fusing iron with brass, xv, 148

Gadus lota, xi, 99
morrhuæ, x, 124; xi, 99; xii, 117; xvi, 204
Gail Borden's beef extract, xiv, 149
Galactoscope, xi, 99
Galbanum, xi, 132
true source of, xi, 75
Galina, xv, 193
Gallæ, xiv, 163
Gallate of silver, xvi, 250
Gallic acid, xv, 238; xvi, 249
and gallhumic acids, ix, 117
Galls, xiii, 112
of cynips quercus petioli, ix, 88
Gallstones, xi, 172
Gallus domesticus, x, 124
Galvanic current on lactic and succinic acid, ix, 122
Gamboge, xiii, 111; xvi, 324
resin, xv, 257

Gamberine's injection, x, 86
Gardner's, Dr. A. K., remarks on sale of poisons, ix, 54
Garlic, ix, 178
preservation of, xii, 117
Gargles, x, 86; xii, 117
creasote, Dr. H. Green's, x, 86
Garrigues, S. S., bromine from Saginaw brines, xiv, 76. 243
Michigan salt, xvii, 419
St. Louis medical spring, xvii, 418
Gas, coal, x, 190
decomposition by, xvi, 152
Gases in urine, xii, 172
Gas furnaces, ix, 43; xii, 71
and furnaces, x, 88
and appurtenances, x, 88
heating apparatus, x, 88; xiii, 180; xiv, 146
illuminating, xv, 150
from apples, xiv, 182
Gastric liquids, xii, 169
and bilious liquids, x, 172
Gastrolobium bilobium, xv, 176
Gaultheria procumbens, x, 107
Gay Lussac's humid assay improved, xvii, 214
Gay, William, deceased, xiii, 29
Gelatine, x, 169; xiv, 193
for capping bottles, xiv, 147
coating pills, xvii, 119
test for, xiv, 193
vegetable, xi, 156
Gelatinous acetate of lime, ix, 103
Gelose, ix, 120
Gelseminia, xvi, 386
Gelsemium sempervirens, xiv, 162; xvi, 386
General and elementary investigations, x, 184
goods, xvi, 376
notices concerning alkaloids, x, 164
observations on pharmacy, xi, 59
results of percolations, xiii, 219
Gentiana, x, 116
Gentianaceæ, x, 116; xi, 92; xii, 108; xiv, 162; xvi, 191
Gentianæ comp. tinctura, x, 73
extract, x, 77
Gentiana lutea, xi, 92; xvi, 191
Gentiogenin, xi, 92
Gentiopicrin, xi, 92
Gentlemen proposed as members, xiii, 37
Genuine cologne water, xii, 78
Georgia law relative to errors made by druggists, xvi, 336
relative to practice of pharmacy, xv, 335
German and English aconitin, xvii, 263
books, x, 14; xi, 53; xii, 65
legislation improving pharmacy, xvii, 270
proprietary medicines, xi, 51
publications, xiv, 141; xv, 132, 135; xvi, 138
works, ix, 81, 82, 83; xi, 53
Germer Ballière, deceased, ix, 70
Germination, xi, 155
Gheiwe, or Geve opium, xvi, 174
Gillen's beef lozenge, xiv, 149
extract of beef, xiv, 149
Gillenia trifoliata, remarks on, xiv, 56
Ginger, xvi, 326
Githagin, xvi, 280
Gizzard of South American ostrich, xv, 80, 400
Glacial acetic acid, xi, 136
Glass drilling, xv, 149
engraving, xv, 149
explosion of, x, 67
ink for, xvii, 161
vessels, xv, 138; xvi, 145
silvering, xvii, 162
ware, xv, 284; xvii, 355
Glechoma hederacea, x, 113
Globularia alypum, x, 113
Globulariaceæ, x, 113
Glonoin, xi, 135
new properties of, ix, 127
Glucose, x, 166; xi, 167; xii, 163; xv, 259; xvii, 244
action of light on, xii, 163
and dextrine, x, 168
in Trommer's test liquid, xii, 164
manufacture of, xvii, 244
test, xv, 289
Glucosic fermentation of cane sugar, ix, 114
Glucosides, x, 137, 166; xi, 143; xii, 164; xv, 260
and allied proximate principles, xvi, 280
Glue, xi, 61; xv, 265
elastic, xvi, 150

Glue liquid, xii, 92; xvi, 150; xvii, 161
ready for use, xiii, 141
Gluten in bread, xii, 166
of wheat, xi, 155
Glutinous substances dried and powdered, xiv, 149
Glycelæum, xvi, 153
Glycerate of tar, xvii, 148
Glycerin, x, 161; xi, 135; xii, 91, 237; xiii, 108; xiv, 147; xv, 249, 250; xvi, 270, 328; xvii, 239
table of density of, xvii, 240
Bower's, ix, 102
and cod-liver oil, ix, 79
contaminated with glucose, xv, 251
crystallized, xv, 251; xvii, 241
detection of impurities in, xvii, 241
in extracts, xvii, 145
for gas meters, xii, 91
impurities in, xvii, 241
in the arts, ix, 104
injection, x, 86
lotion, xvi, 159
its mission, xii, 237
ointment for itch, ix, 97
in ointments, xiii, 108
in pills, xvii, 154
in plasters, xvii, 153
a preventive of apotheme, xiv, 147
percentage of water in, xvii, 240
as a solvent, xvii, 241
some application of, x, 87
substitute for, xiii, 159
alcohol test for sugar in, xvii, 241
with mucilage of linseed, x, 186
Glycerinum, x, 136; xi, 104
Glycerolatum aloes, xi, 63
chloroformi, xi, 63
ferri-iodidi, xi, 63
Glycerolates of extracts, xi, 64
Glyceroles, xii, 83
of aloes, ix, 98
bismuth, xii, 84
borax, xii, 83
carbolic acid, xii, 84
chlorate of potash, xii, 83
kino, ix, 103
Glyceroles of oil of mustard, xii, 83
sulphate of iron, xii, 84
sumach, xv, 155
tannin, xii, 84
Glycerylborate, xvi, 268
Glycolic acid, xv, 239
Glycolignose, xvi, 277
Glyconine, xv, 157; xvii, 119, 386
Glycyrrhiza glabra, x, 104; xi, 82
Glycyrrhizæ, extract, x, 77
Glycyrrhizine, x, 167
Gmelin, Chr., deceased, ix, 70
Gnetaceæ, xvi, 188
Goa powder, xii, 115
Goddard's elix. valerianate of ammonia, xiii, 59
Golconne or glyconine, xvii, 119, 386
Gold, x, 155, 184; xiii, 128; xiv, 179; xv, 225; xvi, 238
hyposulphite, xv, 225
reduction of, xvi, 238
Gomme de chagual, xvi, 200
Gordon, W. J. M., on American tartar, x, 226
glycerine, xii, 237; xiii, 159
president's address, xiii, 30
Gossypium herbaceum, x, 98; xii, 97; xv, 174
Gout pills, Becquerel's, x, 82
Gouty excrescences, xi, 172
Graduating measures, xvii, 47
Graham's letter about tartar, x, 226
Grahame's, Prof. I. J., on Virginia opium, xiv, 76, 233
Graminaceæ, x, 120, xi, 96; xv, 190; xvi, 201
Gramineæ, xii, 114
Grandral's narcotic extracts, xvii, 144
Granataceæ, xv, 179
Granular charcoal, xvi, 163
effervescent citrate of magnesia, ix, 103; x, 68; xiv, 222; xv, 163; xvi, 163
Granulation of medicines, x, 68
Granules, citrate of magnesia, xv, 163
effervescing, xv, 163
Grapes, xvi, 180
Grape sugar, x, 188
Graphite, x, 140; xv, 207; xvi, 208
Gray powder, arsenic not to be found in, ix, 127
Greek tobacco, x, 116
Green color x, 191
of leaves, ix, 123

Green, Dr. H., creasote gargles, x, 86
fruit of Diospyros Virginianum, analysis of, ix, 124
Grey cinchona bark, xvi, 186
Grindela robusta, xvi, 188
Groneweg, Louis, deceased, xiv, 20
Grossulaceæ, x, 95
Ground pepper adulterated, x, 189
spices, xii, 74
Guaiac, xi, 132, 142
Guaiacum, xi, 133, 142; xv, 284
its claims to the name of balsam, ix, 32, 167
officinale, x, 102; xii, 97
resin, ix, 120; x, 167; xiii, 111
Guano, x, 176
from air, x, 176
poor, x, 176
urban, x, 176
from urine, x, 176
Guanina, xi, 163
Guarana, ix, 42; xvi, 181
Guibert's application to ulcers, x, 86
Guibourt, M., deceased, xv, 51
Guilandina bonducella, xi, 83
Gum, xvii, 245
acacia, xvi, 324
aloes socot., xvi, 329
and albumen, xi, 156
arabic, xv, 283; xvi, 324; xvii, 184
caramania, xiii, 111
determination of, in liquids, xvii, 245
gambogia, xvi, 324
kino, xvi, 325
lac from croton sonorensis, xvii, 189
myrrh, xvi, 325
Peruvian, xvii, 189
resins powdered, xii, 73
purified, xii, 102
tinctures of, xvii, 381
and sugar, xi, 144
and resin, solubility in alcohol, x, 79
spurious, xvi, 205
tragacanth, xvi, 325
Gun-cotton, x, 168; xii, 164; xv, 257
constitution of, xii, 165
preparation of, xii, 164; xvii, 48
and pyroxylin, paper, xii, 165
Gunpowder rendered inexplosive, xiv, 148
arsenic in, ix, 127
Gurgun balsam, xiv, 162
Guthrie, Dr. C. B., remarks on sale of poison, ix, 48, 53
Gutta percha, solution of, x, 71
and caoutchouc, xi, 130
Guttiferæ, xiii, 111; xvi, 192
Gypsum, xii, 119

Habitat of cacao, xv, 349
Hæmatoidin, xi, 172
Hæmatoxylin, xii, 166
Hæmatoxylon campechianum, xi, 83
Hæmostatic, xii, 89
Hager's process of morphiometry of opium, xvii, 178
Hagner's hints on grinding flaxseed, x, 68
Hair wash, arnica, x, 85
Hamamelaceæ, xiv, 160
Handbook of chemical manipulation, ix, 78
Hanover pharmacopœia process for atropia, xi, 151
Haplopappus bailahuen, xvi, 188
Hardy's freckle wash, x, 86
Harper Hospital, Dr. Farrands, xiv, 28
Dr. Duffield, president of Board of Trustees of, invites to visit, xiv, 44
Hard and unyielding cements, xvii, 162
Harlow car spring waters, xii, 192
Hashish, x, 105
Heat, generation and application, xii, 285
Heaton's steel and iron process, xvii, 220
Heavy metals, x, 137, 148; xii, 123, 177; xiii, 124
oil of wine, xiii, 129
Hegeman, F. A., death of, ix, 7
Heinitsh, Charles A., on saffron culture, xiv, 76, 254
Helenium autumnale, xv, 182
Helianthus annuus,, ix, 124
tuberosus, xvi, 187
Heliscarpus copalifera, xv, 174
Helleboreine, xv, 260
Helleborine, xv, 260
Helleboresin, xv, 260
Helleborus, x, 91; xv, 172
Helleborus niger et viridis, xiv, 157
Henfrey, Prof., death of, ix, 70
Henna, xi, 78
Hepatica, xi, 97
Herbaria pharmaceutical, xiv, 147

Herb cutter, Chapin's, xiii, 187
Herbs, indigenous, xv, 274, 278, 284; xvi, 325
Herring pickle, x, 177
and propylamine, ix, 115
Hesperidine sugar, xv, 260
Heydenreich, F. V., on cubebs, xv, 93, 337
tinct. ferri. chlor., xv, 95, 361
on drugs, &c recommended, for introduction into U. S. Pharmacopœia, xvii, 369
Hexacrotic acid, xvi, 257
Hexatomic alcohols and ethers, xvii, 243
Hill on cantharis, x, 228
Henry E., deceased, xvii, 22
Hibiscus esculentus, ix, 88
Himly's spiritus ophthalmicus, x, 71
Hippocastaneæ, xvi, 179
Hippuric acid, xi, 141; xvi, 257
in urine, xii, 172
Hirsh, Joseph, on golcoine, xvii, 386
Hirudines, xvii, 373
Hirudo medicinalis, xv, 192
Historic note of Permanent Secretary, xvii, 121
History of Chemistry, xvii, 278
discovery and manufacture of phosphorus, ix, 111
Hoagland's reply to Query 18 on vinegar, xvii, 119, 366
Hodgson's moulded graduated measures, x, 48, 199
Hoffman, Dr. F., report on specimens, xvi, 371
on progress of pharmacy, xvii, 123
Holland, adoption of decimal weights by, xvii, 271
Holloway's ointment, xvii, 164
pills, xvii, 164
Homœopathic medicine, ix, 100
Homologous coloring matters, xii, 166
Homologues of hydrocyanic acid, xvi, 239
Honey, xii, 117, 286; xv, 156; xvi, 204; xvii, 186
and its adulterations xv, 61, 341; xvii, 186
its clarification, x, 78; xvii, 187
as an excipient for pills, xii, 86
purification of, xv, 156
as a vehicle for external remedies, ix, 101
Honeys and syrups, acidulous and inspissated juices, x, 78
Hops and lupuline, ix, 71
spent, x, 189
Horse-chestnuts, poisonous, ix, 126
Human brain, x, 171
Humulus lupulus, x, 105; xii, 111; xv, 188
Hunnewell, J. L., case of, x, 40; xv, 99
Hura crepitans, xvi, 197
Hydrangea arborescens, xii, 101
Hydrargyri ammoniati plasma, x, 84
chloridum corrosivum, xii, 124; xvii, 335
mite, xvii, 335
iodidum viride, xvii, 333
nitratis ung't., x, 83
oxidi plasma, x, 84
oxidi unguentum, x, 83
oxidum, x. 133
rubrum, xvii, 335
subnitratis plasma, x, 84
sulphas flava, xvii, 335
sulphuretum rubrum, xvii, 335
unguentum, x, 83
Hydrargyro iodide of arsenic, x, 152
Hydrargyrum, x, 133; xi, 103; xiii, 127; xv, 223
cum cretâ, x, 133; xi, 62; xvii, 155, 335
commercial, xvi, 77, 379
preparation of, ix, 101
Hydrastia, xi, 152; xiii, 134

Hydrastis Canadensis, x, 91; xi, 71
alkaloids of, x, 241
an adulteration of serpentaria, xv, 92
Hydrated alumina, xv, 213
iron oxides by dialysis, xvii, 221
sesquioxide of iron, xv, 215, 384
silicate of magnesia, xv, 196
Hydrate of bisulphide of carbon, xvi, 220
chromic acid, xii, 146
lime, xii, 141
soda, xii, 139; xvi, 222
Hydrates of baryta and strontia, ix, 107
hydrocyanic acid, xvii, 256
silicic acid, xv, 206
Hydride of arsenic, xii, 148
methyl, xvi, 206
phosphorus, xv, 205
Hydriodate of pseudo-morphia, xvi, 260
Hydriodic acid, xiv, 172; xvi, 216
ether, x, 160
Hydroberberina, xi, 152
Hydrobromic acid, ix, 44, 220; x, 143
ether, x, 160
Hydrocarbons, xv, 252; xvi, 271; xvii, 127, 230
Hydrocarotin, xv, 261
Hydrochloric acid, x, 143; xi, 115; xii, 136; xvii, 197
Hydrocoffeic acid, xvi, 252
Hydrocyanic acid, x, 155, 185; xi, 128; xv, 227; xvi, 419
Hydrofluoric acid, xii, 137; xvii, 201
Hydrogen, x, 139; xi, 109; xii, 133; xiv, 167; xv, 200; xvi, 213; xvii, 192
antimoniuretted ix, 100
binoxide, xv, 201
carburetted, xvi, 276
cyanide, xvii, 256
peroxide, xiv, 168; xvi, 208
phosphuretted, xv, 205
persulphide, xvii, 205
reduction of oxides, xvii, 143
sulphide, xvii, 205
sulphuretted, xiv, 170
Hydrogenii binoxidum, x, 128, 139; xi, 101
Hydromagnesite, x, 127
Hydroparacumaric acid, xvi, 252
Hydrophobia, cure for, xiv, 155
Hyoscyamia, xv, 245, 404; xvi, 262
effects of, xvii, 264
Hyoscyamine, xvii, 264
Hyoscyamus niger, x, 115; xv, 184
Hypobromous acid, xi, 116
Hypochlorite of lime, x, 146; xi, 168
silver, xvi, 237
soda, xvi, 215
Hypochlorites, xvi, 215
Hypodermic injections in its relations to toxicology, xiv, 237
Hypogæic acid, xvi, 253
Hypophosphite of lime, x, 147
quinia, ix, 104
Hypophosphites, x, 129
Hyposulphite of gold and soda, xv, 225
lime, xi, 121; xii, 141
magnesia, xii, 142
platinum and soda, xv, 226
soda, x, 145; xi, 118; xii, 139
Hyposulphites, xv, 194, 203; xvi, 209

Iberis amara, xii, 97
Ice, x, 139
Ignatiæ amaræ tinct. comp., x, 73
Igniting point of vapors, xvii, 142
Ignition of inflammable substances by ozone, xii, 132
Ilex acutangula, x, 108
amara, x, 108
curitibensis, x, 108
gigantea, x, 108
Humboldtiana, x, 108
nigropunctata, x, 108
ovalifolia, x, 108
paraguaiensis, x, 108; xiv, 161
Illuminating gas from apples, xiv, 182
Illustrated paper on apothecaries' coat of arms, xvi, 118, 420
Illustrations of the nueva quinologia of Pavon, ix, 81
Ilmenium, xv, 220
Impermeable vessels, xii, 71
Imperial pint, x, 67
Imports at Baltimore, xv, 297
Boston, xv, 299
value of, xv, 305
New York, xv, 289
Philadelphia, xv, 294
statement of, xvi, 308

Improved apparatus for sublimation of benzoic acid by O. Rump, xvii, 138
formula for syrup. rhei aromat., ix, 104
hæmostatic, xii, 89
process for fluid extract of buchu, xiv, 81–88
specific gravity bottle, xvii, 303
Improvement of extracts by glycerine, xvii, 145
filtering paper, ix, 103
in scales, xiv, 146
Impure oxides of iron used in medicine, x, 253
veratria, ix, 124
Impurities and adulterations, xi, 189
admixture of glycerine and their detection, xvii, 241
in ammonia and water, xiv, 183
of commercial zinc, ix, 80, 110
Incorporation, act of, proposed, ix, 11; x, 39; xvi, 30, 55
Indelible aniline ink, xvi, 150
Indestructible writing, xii, 92
Index, ix, 265; x, 273; xi, 289; xii, 345; xiii, 250; xiv, 309; xv, 443; xvi, 497; xvii, 461
to first eight volumes, x, 29, 35, 309
referred to committee, x, 30
to report of committee of progress of pharmacy, ix, 269; x, 278
India-rubber, xv, 257
Indian ink, substitute for, xiii, 142
Indicam in urine, xii, 171
Indigo, xv. 264
blue, reduction of, xvii, 267
new color from, xv, 264
solubility, xvii, 266
test for glucose, ix, 114
value, xvii, 266
Indigotin, xiv, 193
Indium, xii, 140; xiv, 174; xv, 218; xvi, 229
Induction of Prest. Procter, ix, 23
Moore, xi, 32
Gordon, xii, 30
Lincoln, xiii, 45
Stearns, xiv, 38
Milhau, xv, 39
Parrish, xvi, 44
Sargent, xvii, 40
Influence of chlorous acid on organic substances, ix, 49
of gaseous currents in decomposing compounds, xvi, 152.
of ozone on vegetation, xii, 132
Infusa, xvii, 335
Infusions, ix, 105; xii, 92; xiii, 106
and decoctions, x, 71
by percolation, xiii, 106
preservation of, xi, 61
report on, xi, 61
of senna, xii, 92
Infusoria, origin of, xvii, 164
Infusum rhei, x, 71
sennæ comp., xvii, 373
Injections and clysters, x, 86
Injection Gamberinis, x, 86
glycerin, x, 86
hypodermic, value of, xiv, 237
Valerius', x, 86
vegetale au matico, xvii, 165
Injurious technical preparations, x, 189
Ink aniline, xvi, 150
indelible, xvi, 150
blue, xiii, 107
for writing on glass, xvii, 161
indelible aniline, xvi, 150
marking, xvii, 161
Inocarpus edulis, xvi, 189
Inorganic analysis, x, 177
chemistry, ix, 106; x, 127, 138; xi, 108; xii, 130; xiii, 128; xiv, 166; xv, 199; xvi, 239; xvii, 230
compounds, x, 128; xii, 120; xv, 194
substances, xi, 157; xiv, 183
Inosite, x, 166
Insecta, x, 125; xii, 117; xvi, 204
Insolubility of various salts, in solution of ammonia, xii, 140
Inspissated juices, x, 78
Institutions, scientific, x, 54
supplied with sets of Proceedings, xiv, 22
Instruments, xvii, 292
for rapid filtration, xiii, 178
Instruction of pharmaceutists, xiii, 190
Insurance, fire, xv, 29
on proceedings, xiii, 26
property, xiii, 26; xiv, 23

Internal revenue committee to be appointed by President, xiii, 94
committee appointed, xiii, 96
law, on the, xi, 261
committee, report of deferred, xiv, 41, 50
report, discussion on, xiv, 51
Introductory course of natural philosophy, ix, 80
Investigations about purity of essential oils, ix, 103
Invitation to visit Academy of Natural Sciences, xvi, 37
to adjourn to Chicago, xvi, 97
of Michigan State University at Ann Arbor, xiv, 28
from druggists and pharmacists of Baltimore to an excursion on the bay, xi, 32
from Dr. George Duffield to visit Harper Hospital, xiv, 44
to certain medical gentlemen to attend our sittings, ix, 19
to excursion on Lake Michigan, xvii, 99
to excursion on Thomas Collyer, xv, 84
to faculties of Jefferson Coll. and Univ. of Pennsylvania, and medical profession in general, to be present at our sessions, xvi, 38
from faculty of Pennsylvania University, xvi, 37
to faculty of Rush Medical College, and medical profession generally, to be present at our sessions, xvii, 36
of Professor Gray to visit Botanical Garden, Cambridge, xiii, 37
from Hovey & Heffern to visit art gallery, xvii, 81
to lady visitors to drive in rural districts, xvi, 53
Invitation of Librarian of American Philosophical Society, xvi, 37
to medical profession to be present at our sessions, xii, 25
to meet in Baltimore, received, xvii, 100
to meet in Chicago, xii, 46; xvi, 97
to meet in Philadelphia, xv, 67, 105
to meet in Detroit, St. Louis, and New York, xiii, 50
to meet in St. Louis, ix, 37; xiii, 50
to members and their ladies to meet in College Hall, at 8 P.M., xvi, 37
of Metropolitan Glee Club to a trip to St. Joseph, Michigan, xvii, 44
of New York College of Pharmacy to meet in New York, xiv, 45
of Perkins, Stern & Co., to visit their vaults, xv, 48
to professors of College of Pharmacy, medical colleges, and profession to seats, xv, 19
to professors of University of Maryland and Maryland College of Pharmacy to sit with us, xi, 30
to be present at Microscopic Exhibition, xvii, 99
of Dr. Squibb to visit his laboratory, ix, 32
to steam down to Lake Erie accepted, xiv, 77
to visit Copper Smelting Works, xiv, 28
Detroit Water Works, xiv, 42
institutions, x, 16
laboratory of Chicago Medical College, xvii, 96
Long Island Historical Society, xv, 17
Longview Insane Asylum, xii, 44
Mr. Longworth's wine vaults, xii, 40

Invitation to visit Massachusetts General Hospital, xiii, 37
Rush Medical College, xvii, 45
D. B. Shipman's White Lead Works, xvii, 81
Sanitarium, xvi, 53
Iodic acid, x, 143
Iodide of ammonium, ix, 33; x, 146; xi, 119; xii, 140; xiii, 135; xiv, 76, 245; xv, 211
antimony, x, 153
arsenic, x, 152
bismuth, x, 153
calcium, xi, 120
ethyle, ix, 115
iron, x, 81; xvi, 227
pills, ix, 97
syrup, ix, 97
lead, x, 151; xv, 218; xvi, 231
manganese, xvi, 226
nicotin, xiii, 114
potassium, x, 144; xi, 116; xiv, 172; xv, 195, 209
propylamine, ix, 115
selenium, xv, 203
silver, xv, 225
sodium, ix, 108
starch, x, 168; xvi, 278
sulphur, xi, 116
titanium, xvi, 235
Iodides, x, 144; xii, 121
Iodidum ferri, x, 81
Iodine, x, 143; xi, 116, 161; xii, 120, 137; xiii, 118, 119; xiv, 172; xv, 193, 203; xvi, 328; xvii, 200
action on sugar, xiii, 119
from Chili, xvii, 200
colorless solution of, xvi, 132, 282
cones, x, 82
determination of, xiv, 184
elimination of, xiv, 185
and milk, xvii, 200
in ointments, ix, 105
reaction, xvii, 200
terchloride, xv, 204
tests for, x, 181; xvii, 199
wine, natural, x, 75
Iodinii tinctura, x, 70
ung. comp. and ung. potassii iodidi, x, 84
Iodinum, x, 129
Iodinized syrup of horseradish, xv, 169
Iodized opodeldoc, xv, 156
Iodoferrated cod-liver oil, xv, 158
Iodoferro-phosphorated elixir of horseradish, xv, 153
Iodoform, x, 160; xvi, 206
Iodohydrargyrate of iron, syrup of, x, 70
Ipecacuanha, xi, 181; xvi, 327; xvii, 176
extr. fluid, x, 77, xi, 235, 247
Ipomœa jalapa, x, 109
operculata, x, 109
turpethum, xv, 183
Iridaceæ, xi, 95; xii, 113; xiii, 115; xiv, 159; xv, 189; xvi, 200; xvii, 115
Irideæ, xvii, 168
Iridium, xv, 226
platinum, osmium, and rhodium, cyanides of, x, 155
Iron, x, 149, 183; xi, 122, 163; xii, 143; xiv, 176; xv, 215, 284; xvii, 220
alcoholized, xv, 162
in brass, xiv, 176
burning, colored by phosphorus, xii, 144
in oxygen, xiii, 124
by hydrogen, xi, 122; xiii, 124
carbonate granular, xvi, 168
cast, silvering of, xvii, 163
and steel, x, 149
cast, xii, 143
chloride tincture of, xv, 95, 361
elixir citrolactate of, x, 75
estimation of, xii, 178, 179
ferrocyanide, x, 156
hydrated oxide by dialysis, xvii, 221
iodide, xvi, 227
preservation of, xiv, 172
iodohydrargyrate, syrup of, x, 70
magnetic peroxide of, xi, 123
manufacture of, xvii, 129
in medicine, xv, 285
nitrate, xvi, 167
nitride, xiv, 176
oxalate, xvii, 380
oxides, xvii, 221
solution of, xvi, 167
impure, used in medicine, xi, 253
peracetate, xv, 165

Iron, perchloride of, x, 80; xii, 143; xiii, 121
and collodion, xii, 90
pernitrate, xv, 165
persulphate, x, 149
protocarbonate, xvi, 228
protochloride, xv, 216
protosalts, x, 149
protosulphate, xv, 215
pyrophosphate, xvi, 115, 403
and soda solution, xvi, 166
and quiniæ, citrate of, alkaloid in, xiii, 132
reduced by hydrogen, xi, 122; xiii, 124
rust, xiii, 125
rust removed, xiv, 154
rusty, xv, 148
salts of W. S. P., xvii, 332
sesquichloride for ulcers, xii, 96
sesquioxide, xv, 91, 215, 384; xvi, 227
sesquisalts of, x, 183
soda, pyrophosphate of, xiv, 171
solutions for dyeing, xvi, 167
and steam, xi, 122
stearate, x, 84
succinate, xvi, 206
tests for, xii, 143
tritration of, xiv, 187
valerianate of, xv, 234
vessels, xv, 138
vitrifying, xvi, 152
with brass, xvi, 152
Isatine, xv, 264
Isa-tsin, xv, 182
Iso-citric acid, xvii, 254
Isodulcite, xvi, 252
Isomalic acid, xv, 232
Isomeric alkaloids, ix, 121
Isomerism of binoxide of tin, ix, 100
Isonandra gutta, x, 108, xii, 107
Isopurpuric acid, ix, 118
Italians adopting a common pharmacopœia, xvii, 270
Italian publications, xv, 136; xvii, 142
Ivory, artificial, xv, 150

Jacobsen's process for morphiometry, xvii, 178
Jalapa, xi, 181; xvi, 327
commercial, xv, 386
Jamaica senna, xvi, 182
Janipha manihot, x, 100
Japan wax, ix, 89, xiv, 193
Japanese isinglass, ix, 90
Jargonium, xvii, 216
Jatropha glauca, xi, 79
Jeffersonia diphylla, xi, 72
Jellies, xii, 85
cakes, &c., x, 80
cod-liver oil, x, 81
oil, x, 80
Jenkins, Dr., on sulphite of quinia, xiv, 75
Jobst, Dr. Fred., dec'd, ix, 70
Johannesbunn mineral spring water, xii, 119
John, F. L., dec'd, xiii, 28
Jones, E. C., on extr. of quassia, xiv, 44
seeds of cimicifuga, xiii, 186
Journals used in framing report of progress of pharmacy, x, 53; xi, 50; xii, 56; xiii, 97; xiv, 196; xv, 125; xvi, 130; xvii, 124
of materia medica and pharmaceutic formulary, ix, 72
of transactions of Maryland College of Pharmacy, ix, 72
Judkin's ointment, xv, 151
Juglandaceæ, xvi, 198
Juglans regia, xvi, 198
Juncaceæ, x, 120
Juniperus oxycedrus, x, 119

Kali aceticum solutum, xvii, 371, 373
tartaricum boraxatum, xvii, 373
Kamala, ix, 91; xvii, 196
Karadissar opium, xvi, 175
Karaine and methysticine, ix, 123
Kelp, xi, 98
Kennedy, R. C., dec'd, xvi, 21
Kent, Asbury, dec'd, ix, 7
Kentucky law on medicinal frauds, xvi, 352
Kidwell, J. L., cabinet of mining and geology, xvii, 422
Keroseline, x, 138
Kiersted's, Pres't, address, ix, 32
Kinic acid, x, 158; xi, 140; xv, 234
King, Jas. T. metallic lead in flour, xiv, 76, 255
on deposit in tinct. rhei, xvii, 396
Henry, dec'd, xv, 28
Kino, xvi, 325
like gum from Croton draco, xvii, 189
Kinovic acid, xii, 105; xvi, 248

Kinovin and cinchonic red, ix, 119
Kinovine, x, 167
Knapp, E. C., dec'd, xi, 25
Koussin, xvi, 281
Kousso, analysis of, ix, 123
Krameriaceæ, x, 97; xiii, 111; xvii, 181
Krameria cistoidea, xvi, 181
triandra, x, 97; xvii, 181
Kreatinina, xi, 170
Kreatinine present in decomposing milk, xvii, 268
Kresotic acid, xi, 141
Kutschina opium, xvi, 175
Kynurenic acid, xv, 239

Labarraque's solution, xii, 76
Labiatæ, x, 114; xi, 90; xiv, 161; xv, 183; xvi, 190; xvii, 171
Laboratory, U. S. A. at Philad'a, xiv, 78, 272
Labrimin, xiv, 180
Lac sulphur, xv, 385
Lactates, xi, 105
Lactic acid, x, 159
as a remedy in croup, xvii, 250
preparation of, ix, 105, 120
Lactene, xv, 260
Lactose, xi, 145
American, xvi, 406
Lactuca Canadensis, xvii, 384
elongata, xvi, 97, 405
Lactucarium and its preparations, ix, 97
Lactuca sativa, x, 113; xi, 89
Lactucarium syrup, xvi, 170, 400; xvii, 158
Lactucic acid, xi, 143
Laidley, Joseph, dec'd, x, 15
Laine's febrifuge draught, x, 80
Laminaria digitata, xiv, 164; xvi, 203
Lamp heating attachment, x, 88
Lane, James B., death of, xv, 27
Lanthanum, cerium, didymium, x, 147, 182; xvii, 217
Larch bark in chronic bronchitis, xiii, 115
Lard, xi, 99; xii, 116
benzoinated, xiv, 46, 224; xv, 151
for burns, xii, 116
extraction and preservation of, xii, 208
preparation of, ix, 98
quality and adulteration of, xiii, 54
Larch bark, xiii, 115
Larix, xii, 113
Larixinic acid, xi, 140
Lartigue's rheumatic pills, x, 82
Latour bark, x, 117
Latua venenosa, xvi, 191
Laudanum, xi, 191, 192
Lauraceæ, x, 106; xii, 100; xv, 186; xvi, 194
Laurineæ, xiii, 112; xvii, 182
Laurocerasi aqua, x, 69
Law about liquors in Penna., xvi, 351
draft of proposed, xvii, 51
resolution on proposed, xvii, 83
Massachusetts, xvi, 355
about poison in Michigan, xvi, 358
Mississippi, xvi, 360
New Mexico, xvi, 355
New York, xvi, 357
Penna., xvi, 356
Wisconsin, xvi, 358
practice of pharmacy in Kentucky, xvi, 370
sales of medicines in Illinois, xvi, 347
Laws, xvi, 299, 332
Lawsonia inermis, xi, 78
Laxans, panis, x, 81
Lead, x, 151, 183; xi, 124; xii, 145, 177; xiii, 125; xiv, 187; xv, 213; xvi, 231; xvii, 220
acetate, xv, 230
chloride, xvi, 231
in citric acid, ix, 99
crystals of, xi, 124
cyanate of, xvi, 241
of copper color, xi, 124
detection of, x, 151
deutoxide of, xiv, 187
estimation of, xvi, 231
volumetric, xii, 177
in filtering-paper, ix, 126
in flour, x, 190; xiv, 76, 255
iodide, x, 152; xv, 218; xvi, 231
manganium and copper in blood, x, 190
nitrate of, xv, 196
nitrite of, xv, 218
oxide of, xii, 146
oxychloride of, xii, 146
perchloride, xv, 219

Lead pipe, cause of corrosion, xvii, 220
pipes, improved, xii, 72
plaster, xv, 162; xvi, 162
poisoning, ix, 131
in snuff, ix, 127
sulphide as a decolorizer, xiii, 125
white, x, 151; xvi, 232
Leave granted to furnish report on progress of pharmacy, xiv, 41
Leaves, buchu, xvi, 325
castor oil plant, ix, 89
senna, xvi, 325
Lecanora esculenta, x, 122
Leblanc's method of soda making, xi, 117
Ledum palustre, xv, 86; xvii, 172
Legal restrictions on sale of poisons, ix, 126
Legal status of pharmacists in United States army and navy, xvi, 343
of pharmacists in France unsatisfactory, xvii, 269
Legislation in Great Britain, xvii, 269
in United States, xvii, 271
report of committee on, xvi, 20, 98, 99, 329; xvii, 21, 26
Legumin, x, 169; xvi, 198
Leguminosæ, x, 103; xi, 82; xii, 99; xiii, 111; xiv, 160; xv, 176; xvi, 181; xvii, 183
Lemberger, Jos. L., on substitution of indigenous for foreign aromatics, xvii, 382
Lemonade, xii, 77
Lemon-juice, xii, 76; xvii, 181
Letter of acknowledgment from John Attfield, xvii, 24
Letter of acknowledgment from honorary members, xvii, 24
Letter of acknowledgment from O. S. Bartles, xv, 268
Fr. Beckert, xiv, 198
Dr. Björklund, xiii, 47
Chicago College of Pharmacy, xii, 46
Hon. Howell Cobb, ix, 9
John M. Clark, xvi, 335
H. T. Cummings, xv, 93
Dr. Ehrenberg, xvii, 24
H. F. Fish, xiv, 56
Wm. Gellatly, xvii, 27
Letter of General Austrian Association, xiv, 68
honorary members, xvii, 24
Boston milk inspector, ix, 138
Letters and correspondence about J. L. Hunnewell, xv, 99–104
of D. C. Robbins, xvii, 100, 410
Mr. Rose, xvi, 26
Mr. Stearns about native wines, xv, 88
about status of pharmacy in Canada, xvi, 369
Leucic acid, xii, 154
Leukaniline, xiv, 247
Libertia ixioides, xvi, 200
Lichenes, x, 122; xi, 97; xii, 115; xvii, 165
Licorice extract, adulterated, xvii, 155
Liebig's extract of meat, ix, 104; xiv, 149; xv, 154
powder for soup, xiv, 148
Life-membership, xii, 27, 41
abolished, xv, 67
certificates for, xiv, 34; xv, 69; xvi, 29, 53
Lignin, x, 168; xii, 164; xv, 257; xvi, 277
starch and sugar, xvi, 277
Lignose, xvi, 277
Ligustrum vulgare, x, 118; xi, 94; xii, 109
Liliaceæ, x, 119; xi, 95; xiii, 115; xiv, 163; xv, 189
Lime, x, 181; xii, 177; xiv, 185; xv, 212
bisulphite, xvi, 209
carbonate of, xvi, 223
chlorinated, x, 147; xii, 141, xvi, 215
crucibles, xv, 139
determination of, xiv, 184
hydrate of, xii, 141
hypochlorite of, x, 146
hypophosphite of, x, 147
phosphate, xiv, 177
in intestines, xii, 170
pure, xiv, 175
separation from magnesia, xii, 177
sulphate, xvi, 223
sulphite, x, 147
tartrate, x, 157
water in croup, xiii, 122

Linaceæ, x, 98; xii, 97
Lincoln, H. W., address on taking chair, xiii, 45
President, address, xiv, 29
on Chapin's herb cutter, xiii, 187
on lard, xii, 208
ol. theobromæ, xv, 108, 347
opiferque per orbem dicor, xvi, 420
on request for photographs, xvi, 119
Linen, test for, xiv, 154
Lines, spectral, x, 178
Linoleum, xiv, 182
Liniment of iodine with carbolic acid, xvi, 159
Liniments, xii, 88, 285, 290; xv, 156
chloroform, x, 86
of U. S. P., xvii, 335
and washes, x, 85; xii, 88; xvi, 159
Linimentum aconiti, xv, 156
belladonnæ, xv, 156
saponis, xvii, 335
Linseed oil, ix, 104
Linum usitatissimum, xii, 97
Liquefaction of protoxide of nitrogen, xiii, 117
Liquidambar orientale, xi, 86; xv, 174
styraciflua, ix, 88; xii, 222; xiii, 160; xiv, 160
Liquid ammonia, xi, 119
diffusion, x, 184
glue, xii, 92; xvi, 150; xvii, 161
inflammable, xvii, 142
soap, xv, 156
Liquids, boiling-point of, x, 67
gastric and bilious, x, 172
specific gravity of, xiv, 147
Liquometer, xvi, 145
Liquors of U. S. P., xvii, 335
Liquor ammoniæ acetatis, x, 130; xii, 76; xv, 165; xvii, 213, 335
bismuthi, xiii, 109; xiv, 76, 149, 252; xv, 165; xvi, 164, 462
et ammoniæ citratis, xiii, 127
brominii comp., xi, 62
Liquor carbonis detergens, xv, 157
ferri citratis, xvii, 335
iodidi, ix, 108
nitratis, xi, 63
oxydati, xvi, 166
dialysati peracetatis, ix, 102
persulphatis, x, 69; xvii, 336
sesquichloridi, xi, 62
subsulphatis, xvii, 336
tersulphatis, ix, 97
guttæ perchæ, xii, 75; xvii, 336
magnesiæ citratis, x, 69; xii, 77; xvii, 337
morphiæ bimeconatis, xv, 80
sulphatis, xvii, 337
opii compositus, ix, 101; xvii, 345
sedativus, xvii, 148
plumbi subacetatis, xi, 62; xvii, 337
potassæ, x, 69, 144; xvii, 339
acetatis, x, 70
permanganatis, xii, 77
sodæ, xvii, 337
Liquors, xiv, 148
strength of, xiii, 76
taraxaci, x, 78
List of members deceased, xiii, 250; xiv, 306; xv, 439; xvi, 493; xvii, 457
drugs reported on specially, xii, 190, 196
journals asked to exchange with proceedings, xii, 182
Lists of members dropped from the roll, xiv, 308; xv, 441; xvi, 495; xvii, 459
stricken from the roll, xii, 252, 253
who have resigned, xiii, 252; xiv, 308; xv, 441; xvi, 495; xvii, 459
officers since organization, ix, 4; x, 4; xi, 7; xii, 7; xiii, 7; xiv, 7; xv, 7, 8; xvi, 5, 6; xvii, 5, 6
1860–61, ix, 3
1862–63, x, 3

List of officers, 1863-64, xi, 3
1864–65, xii, 3
1865–66, xiii, 3
1866–67, xiv, 3
1867–68, xv, 3
1868–69, xvi, 3
1869–70, xvii, 3
plants imported by Patent Office, ix, 241
publications received for American Pharmaceutical Association, xii, 183; xiii, 145; xiv, 281; xv, 413; xvi, 473; xvii, 429
queries, ix, 6, 59; x, 44, 47; xi, 43, 47; xii, 49, 52; xiii, 77; xiv, 71, 75; xv, 116–120; xvi, 121–124; xvii, 93, 96
dropped because no replies had been forwarded, xvi, 118
societies and libraries to which complimentary copies of Proceedings have been forwarded, xii, 181; xiii, 144; xiv, 279; xv, 441; xvi, 470; xvii, 426
states from which replies to circular relative to pharmaceutic legislation have been received, xvi, 331
subjects for investigation continued, xi, 47
Literature, pharmaceutic, xvii, 275
Lithia, x, 146
carbonate, x, 130
urate of, xi, 137
water, xiv, 166
Lithium, x, 146; xiv, 175
Litmus, xii, 71
paper, xii, 147; xvii, 161
preservation of coloring matter of, xiii, 136
for testing, xii, 70
Little, Wm. B., deceased, xv, 28
Littlefield's pill roller and cutter, xvi, 120, 468
Living plant, transformation in the, x, 175
Llewellyn, J. P., on deposit in ext. cloves, xvi, 385
Lobeliaceæ, xv, 182
Lobelia, inflata, xv, 182
Local secretary elected, xiv, 38; xv, 105; xvi, 124; xvii, 119
Lolupe, xvi, 189
Lolium temulentum, xii, 114
Lomacin, xvi, 196
Lomacito, xvi, 196
Lomatio obliqua, xvi, 195
London Pharmaceutical Journal, ix, 73
Longshaw, Wm., Jr., deceased, xiii, 29
Lophophytum mirabile, xv, 191
Loranthaceæ, x, 117
Lotio alba boracis, xvi, 159
Lotions, xii, 289
Loveage root, Japanese, xii, 102
Louisville Medical News, ix, 71
Lozenges, cutting, xv, 159
Lozenges, xii, 85, 287; xv, 159
of protocarbonate of iron, xvi, 154
santonin, xii, 85; xvi, 155
compound, xii, 85
jellies and confections, xvi, 154
Lucifer matches, xvii, 162
Lunar caustic, xvi, 152
Lupulinæ extractum fluidum, xi, 227
Lupulin and hops, ix, 40, 171
Lupinus, xi, 82
Luting, xv, 149
Luteolin, xi, 146
Luteoline, xvi, 283
Lycina, xv, 245
Lycium barbarum, xii, 108
Lycoperdon giganteum, ix, 92
Lycopodiaceæ, x, 121; xi, 96; xvi, 203
Lycopodium, xvi, 203
clavatum, x, 121; xi, 196
collection in United States, xvii, 368
and flour, xi, 168
Lythraceæ, xi, 78
Lytta vesicatoria, xiv, 165

Mace and nutmegs, xvi, 326
Macedonian opium, xvi, 175
Maceration preferred to displacement for tinctures, xv, 169
Machine for counting pills, xiii, 106
Maclurin, xii, 156
McDonald, J., deceased, xiii, 28
McMunn's elixir of opium, xii, 77
Madar plant, xi, 93
Magic photography, xiv, 148
Magnesia, x, 130; xi, 121; xiv, 175; xvi, 224; xvii, 337

Magnesia citrate, ix, 88; xi, 105; xii, 77, 122; xiii, 122; xiv, 45, 51, 149; xv, 233
citrate, effervescent, xiv, 222
granular, xvi, 156
granules of, xv, 163
liquor, x, 69
solution, xv, 164
hydraulic properties of, xiv, 175
hypophosphite of, xii, 142
opium, xvi, 174
separation from alkalies, xiv, 185
separation from lime, xii, 177; xiv, 186
silicate, xv, 196
sulphas, xii, 123; xv, 163
sulphite, xii, 142; xv, 164
Magnesium, x, 147; xi, 121, 163; xii, 142; xiii, 122; xiv, 175; xv, 212; xvi, 223
alloys, xvi, 223
chloride of, xii, 119
light, xiv, 176
Magnetic chrome oxide, x, 151
peroxide of iron, xi, 123
Magnoliaceæ, x, 94; xvi, 173
Magnolia glauca, x, 94
Maine Pharmaceutical Association, xv, 18
Maisch, Prof. John M.:
active principle of rhus toxicodendron, xiii, 166
assay of French brandy and whisky, xii, 291
sherry wine, xii, 296; xiv, 78, 269
essay on solut. tartaric acid, xi, 313
examination of whisky and brandy, xiv, 78, 267
hydrobromic acid, ix, 220
lycopodium clavatum, xvii, 368
medicinal spirits, xii, 303
milky juice of lactuca elongata, xvi, 405
narcotic fluid extracts, ix, 213
preparations from lactuca Canaden., xvii, 384
report of corresponding secretary, xi, 172
drug market, xii, 187
legislation, xvi, 329
permanent secretary, xiv, 21; xv, 29; xvi, 22; xvii, 22
Maisch, spec. grav. of medicinal chloroform, xiv, 78, 264
statistics of army laboratory, Phila., xiv, 78, 272
sulphuric acid and its contaminations, xi, 255
verbal remarks on cannabis, ix, 31
Malambo, ix, 91
Malate of iron, xi, 138
Malattia opium, xvi, 174
Maleinic acid, xi, 138
Malic acid, x, 155; xi, 138
Malonic acid, xv, 232
Mallotus philippinensis, xvi, 196
Malt, xv, 258
constituents of, xv, 258
Maltose, xv, 258
Malvaceæ, x, 98; xii, 97; xv, 173; xvi, 178
Mammalia, x, 123; xi, 98; xii, 118
Manganate of soda, x, 148
Manganese, xv, 213; xvi, 225; xvii, 217
black oxide, xii, 123
carbonate, xvi, 227
cyanides, xvi, 241
determination of, xvi, 225
estimation of, xii, 179
peroxide, xvi, 226
sulphate, xii, 123
sulphate, xv, 215; xvi, 223
Manganic acid, ix, 109
Manganii binoxydum, xi, 103
Manganium, x, 127, 148, 183; xi, 122; xii, 143; xiii, 125; xiv, 176
alloys of, xiv, 176
binoxide, xv, 213
copper and lead in blood, x, 170
perchloride, xiv, 176
sulphate, xiv, 249
tannate, xiv, 166
Manganous acid, xi, 122
oxide, x, 148
sulphate of, xvii, 217
Manihot utilissima, xvi, 196
Mannitan, xi, 145
Mannite, x, 166; xi, 144; xv, 260
Mannite in Leptandra virginica, ix, 117
Manual for apothecaries and medical students, ix, 80
Manufactured articles, xvi, 315

Manufactures and arts of Japan, ix, 106
Manufacture of hydrocarbon oils, ix, 78
liquors, wines, and cordials, ix, 81
oleum ætherum, xii, 306
otto of roses, ix, 88
paper and alcohol from wood, xv, 150
phosphorus, xvii, 206
history of discovery, ix, 111
quinine, xiv, 182
soap, xvii, 155
sulphuric acid, ix, 111; xvii, 203
vinegar, ix, 80
Manufacturing pharmacy, ix, 42, 210
Manuscripts, xiv, 35
Marantaceæ, xiii, 115
Maranta arundinacea, xvii, 167
Marble, Carrara, x, 127
Margyricarpus selosus, xvi, 183
Marine fucus, x, 177
Marking ink, xvii, 161
Markoe, G. F. H.:
on camphor water, xiii, 153
confection senna, xvi, 464
extract and fluid extract conii, xvii, 379
liquor bismuthi, xiv, 76, 252; xvi, 462
protection against moths, xvii, 365
purifying alcohols with permanganates, xvi, 393
pyrethrum roseum, xii, 248
solubility of camphor in water, xvi, 212
Marl, extraction of potassa from, xi, 256
Marrubium vulgare, xi, 90
Marshmallow syrup, morphia in, x, 80
Marsh's apparatus improved by Mohr, xv, 142
test, ix, 126
Maruta cotula, x, 112
Maryland College of Pharmacy, ix, 66; x, 192; xi, 173; xii, 186; xiii, 147; xiv, 200
Massachusetts College of Pharmacy, ix, 66; x, 193; xi, 173; xii, 184; xiii, 146; xiv, 199
Massachusetts law about adulteration of drugs and sale of them, xvi, 351
Massot, E. L., report on internal revenue law, xiv, 124
Mata, xv, 80, 400; xvi, 188
Matches free from phosphorus, xiii, 144
lucifer, xvii, 162
Materia medica, ix, 88; x, 90; xi, 71; xii, 95; xiii, 110; xiv, 157; xv, 172; xvi, 117
list, xvii, 307
Matricaria chamomila, x, 112
Mauve dye, ix, 117
Maxwell, Jas. T., death, ix, 7
Mayer, F. F., on tests for alkaloids, x, 229, 238
essay on the strychnaceæ, xi, 248
report on progress of pharmacy, xi, 49
tobacco, xii, 223
Meakim, Jno., obituary notice of, xii, 23
remarks on sale of poisons, ix, 56
Measures, graduated, x, 198
Measures and weights, x, 67; xii, 72
Meal, preservation of, xiv, 147
Meconic acid, x, 186
Meconin, xii, 160; xvii, 262
Medical and pharmaceutic laws being revised for submission to Cortes, xvii, 270
Medicinal indigenous roots and herbs, xvi, 325
spirits, xii, 303
Medicines, granulation of, x, 68
secret, xvii, 164
vegetable, xii, 279
Meeting, place of 14th annual, 1866, xiii, 74
15th annual, 1867, xiv, 68
16th annual, 1868, xv, 105
17th annual, 1869, xvi, 110
18th annual, 1870, xvii, 87, 99
time of 18th annual, 1870, xvii, 119
British Pharmaceutical Conference, xiv, 34
Melaleuca, xvii, 181
cajeputi, x, 96
Melampyrin, ix, 122
Melanthaceæ, x, 119, xi, 95; xii, 114;

xiv, 164; xv, 190; xvi, 201; xvii, 167
Melia azedarach, xi, 78
Meliaceæ, xi, 78; xvi, 181
Melilotic acid, xvi, 254
Melilotus officinalis, xi, 82
vulgaris, xvi, 182
Mel rosæ, x, 79
Melting apparatus, xiv, 146
and solidifying of fats, xvii, 143
Melzar, A. P., on carrageen of New England, ix, 168
Members, active, xvi, 482
deceased, ix, 7; x, 15; xi, 23; xii, 22; xiii, 23; xiv, 20; xv, 27; xvi, 21; xvii, 21, 457
delinquent, xii, 27, 31; xiii, 81, 252; xiv, 31, 66; xv, 34
dropped, xv, 441; xvi, 495; xvii, 21, 459
elected, ix, 2, 17, 30, 33, 41, 45; x, 10, 22, 26, 41; xi, 20, 21, 31, 35, 40, 42; xii, 18, 19, 29; xiii, 20, 21, 37, 64, 76; xiv, 18, 36, 50, 76; xv, 20, 52, 67, 98, 99, 112; xvi, 18, 98, 108, 119; xvii, 19, 46, 81, 115
ad interim, ix, 2; x, 10; xii, 18
election of discontinued, xii, 45
in attendance, ix, 3; x, 10, 11; xi, 10, 11; xii, 19, 28; xiii, 21; xiv, 19; xv, 20; xvi, 19; xvii, 19
honorary, xvi, 487
elected, xvi, 107
from each state, xiv, 35, 36
requested to meet at Dearborn Park, xvii, 50
resigned, xiii, 252; xiv, 308; xv, 441; xvi, 495; xvii, 459
resolution respecting dropped, xv, 53
roll of, ix, 251; x, 257; xi, 283; xii, 327; xiii, 232; xiv, 289; xv, 421; xvi, 481; xvii, 444
Members, southern, xiv, 32; xv, 29, 50
stricken from roll, xii, 251
Membership liable to be lost for neglecting to pay dues for three years, xii, 40
form of application for, xi, 281
Memoir of Hon. Henry Cavendish, ix, 225
Menispermaceæ, xi, 73; xii, 95; xvi, 173
Menispermum Canadense, xi, 73
Mentha, x, 114
piperita, xiv, 161; xvii, 171
Menyanthin, xv, 262
Mercurammonium chloride, xvii, 219
Mercurialina, xi, 150
Mercurialis annua, xi, 79
et perennis, xvii, 169
Mercurial ointment, ix, 103; xv, 152; xvii, 347
Mercuric oxide, xvi, 210; xvii, 219
Mercury, x, 153, 184; xi, 127, 165; xii, 178; xiii, 127; xiv, 179, 187; xv, 223, 285; xvii, 218
ammonio-chlorides of, xi, 313
biatomic character of, xii, 150
bibromide, xv, 224
bichloride, xv, 196, 224
detection of, xiv, 187; xvii, 218
estimation of, xii, 178
fulminate of, x, 158
in California, xii, 150
in Greece, xiv, 179
ore, xvi, 210
price of, xv, 255
protiodide, xv, 224
recognition of, xii, 178
sulphide, xii, 150; xv, 223
sulphocyanide, xv, 223
with chalk, ix, 96
commercial, xvi, 379
Merrill, W. S., on alkaloids of hydrastis, x, 241
Mesitylene, xv, 250; xvii, 230
Metal, expanding by cooling, xv, 148

Metallic antimony, a reducer of ferric salts to ferrous, xvii, 225
arsenic poisonous, ix, 126
cadmium, xiv, 177
elements, xiii, 120
ethyl compounds, xv, 249
lead in flour, xiv, 255
niobium, xiv, 178
oxides, report on, xi, 61
superoxides, xiv, 167
Metamorphia, x, 139, 163
Metal, Aisch's, x, 151
plating, xiv, 146
Metals, coating of, xiv, 146
dyad, xvii, 215
heavy, x, 131, 148; xii, 123, 177; xiii, 124
monad, xvii, 209
of the alkalies, alkaline earths and earths, x, 144
of the alkalies and earths, xiii, 120
pentad, xvii, 225
rusting of, xvi, 181
tetrad, xvii, 220
Methenyl chloride chloroform, xvii, 237
Method of applying atropia to diseased eyes, xii, 89
assaying cinchona bark, xi, 88
hastening filtration, xiv, 145
preserving the coloring matter of litmus, xiii, 136
Methylamine, ix, 93, 148
Methylated spirits as used in the arts in England, xiii, 224
Methylic alcohol, xi, 132; xii, 156; xiv, 181; xvi, 269; xvii, 233
ether, test for, xiii, 128
Methyl bichloride, xvii, 234
diethylborate, xvi, 268
monoborate, xvi, 268
strychnia not poisonous, ix, 124
triborate, xvi, 268
Metrology, xii, 279
Metrorrhagic pills, Bean's, x, 82
Mexican drugs, xvii, 189
Michaud's process for purifying oils, xvii, 149
Michigan law about adulterations of medicines, xvi, 352
salts, xvii, 419
Micrographic dictionary, ix, 79
Microscope, xiv, 105; xvi, 88, 147
spectrum, xvii, 138
Mikania guaco, x, 111
Millemah, Ph. L., hyd. sesquioxide iron, xv, 91, 384
Miller's chemistry, ix, 81
Millingtonia hortensis, x, 114
Mill, Jas. W., on fidelity to Pharmacopœia, xiii, 193
granular citrate magnesia, xiv, 45, 222
ergot, xv, 358
new powder by, xv, 114
Milk, x, 171; xi, 99; xvii, 268
assays of, ix, 136
adulterated, x, 190
analysis of, x, 171
artificial, xvi, 169
sugar, x, 166
Milhau, J., president, address of, xvi, 29
Minerals, x, 126; xii, 118; xv, 192
Mineral acids, report on, xi, 61
caoutchouc, xvii, 190
materials, xvi, 312
oil for lubricating watches, ix, 122
treasures of the Andes, ix, 106
waters, xi, 60; xii, 119
artificial, x, 69; xii, 76
apparatus, xvi, 376
estimation of gases in, xii, 175
syrups, x, 99
Mirror of antimony, xii, 149
Miscellaneous biography, xvii, 279, 280
drugs, xvii, 189
matters, xiii, 140; xvii, 161
observations, xii, 90
Mistletoe, ix, 89
Mistura chloroformi, xi, 70
hæmostatica, xvi, 160
oleoso-balsamica, xvii, 373
sulphurica acida, xvii, 373
Mixtures, x, 80; xii, 84; xiii, 107; xv, 157; xvi, 160; xvii, 147
of gum resins, ix, 103
refrigerating, xii, 70
Mixture, Brown's, ix, 103
bromine, xii, 85
carbolic acid, xvi, 160
chlorinated, xvi, 160

Mixture, chloroform, x, 80; xi, 70; xii, 84
explosive, xvi, 152
musk, xv, 157
Pagliaris, xii, 91
Model of a powdering mill exhibited, xv, 114
Moith, A. T., on lac sulphur, xv, 83, 385
poison bottles, xv, 83, 390
spirits of nitre, xv, 83, 383
secret nostrums, xvi, 467
Molybdates, xv, 221; xvi, 236
Molybdenum, x, 152; xi, 125; xii, 147; xv, 221; xvi, 236
Molybdic acid, x, 152; xi, 125
Momordica elaterium, x, 97
Monad metals, xvii, 209
Monamines, xvii, 257
Monatomic acids, xvii, 249
alcohols and ethers, xvii, 231
Monimiaceæ, x, 94; xvi, 198
Monammoniac carbonate, xvii, 214
Monatomic alcohols, x, 158
Monobromated gallic acid, xvi, 250
Monobromohypogæic acid, xvi, 253
Monograph on Turkey opium, xvii, 177
Monsel's persulphate of iron, ix, 96, 108
Moore's, J. B., paper on suppositories, xvi, 168
Moore's, Prof. J. Faris, remarks on taking president's chair, xi, 32
Moore's, Prof. J. Faris, report on progress of pharmacy, xiii, 97
Moore's, Prof. J. Faris, report on internal revenue law, xiv, 122
Moore, Prof. J. Faris, elected local secretary, xvii, 119
Moore's, Prof. J. Faris, elixir of valer. ammon., xiii, 177
Montpellier saline chalybeate, xiv, 165
Morin, xii, 166
Moridin, xv, 265
Moringia pterigostigma, xv, 178
Morphia, x, 186; xi, 106; xii, 162, 181; xiv, 190; xv, 241; xvi, 259; xvii, 337
distinction between papaverine, xvii, 261
effects of bleaching on, x, 218
preparation of, xvii, 337
Morphiæ acetas, xvii, 338
bimeconate of, xvi, 164
double salts, xvi, 259
detection of, xvii, 260
Morphia, estimation of, x, 186; xii, 182; xv, 241
in opium, xiv, 190
meconate, xv, 166, 382
Morphiæ murias, xvii, 338
Morphia in marshmallow syrup, x, 80
narcotina, &c., xii, 181
salts continued, to Dr. Squibb, ix, 32
of, xiii, 134
solution in chloroform, xvi, 165
strength of commercial opium, xvi, 392
strength of opium, xvii, 178
Morphiæ sulphas, xvii, 338
test for, xv, 241; xvi, 259
Moschi tinctura, x, 73
Moschus, xv, 192
moschiferus, x, 123
Sibiricus, xi, 98
Moses' blowpipe, xiv, 146
Moths, protection against, xvii, 49, 365
Motion that the Association refrains from any indorsement of the views of report of Committee on Pharmacopœia, xvii, 82
that the acquirement and election of members be adopted, was rejected, xii, 42
of Business Committee relative to volunteer papers, xii, 49
to forward copy of report to East River Medical Association, xvi, 98
to increase dues rejected, xii, 42
to increase committee to examine delinquent acts, rejected, xii, 46
for prizes, rejected, xii, 42
of Mr. A. B. Taylor about unanswered queries, xii, 38
to restore life membership, xvi, 53
of thanks to Chicago College of Pharmacy, xvi, 114

Moulded chloride of zinc, x, 87
Moulding of plasters, x, 84
Moved the consideration of the draft of a law be made the order for tomorrow morning, xvii, 41
Moxa, xv, 151
Müller, simple apparatus for detection of arsenic and antimony, xvii, 228
Murexide colors in cotton printing, ix, 121
Musk, xi, 99
mixture, xv, 157
Mussgiller, F. C., valerianic acid, xvi, 397
collodion, xvii, 407
Mustang liniment, xii, 93
Mustard paper, xvii, 161
Myoschilos oblonga, xvi, 196
Myrcia acris, x, 96
Myricaceæ, x, 106; xi, 85; xvi, 198
Myrica cerifera, x, 106; xi, 85
Myristicaceæ, x, 94
Myristica becuhyba, x, 94
Myrmica Texana et melafaciens, x, 125
Myrocarpus fastigiatus, x, 103
Myoschilos oblonga, xvi, 196
Myronic acid, x, 167
Myrosin, x, 167
Myrospermum frutescens, xi, 83
peruiferum, x, 103; xv, 177
toluiferum, xv, 177
Myroxylon pareira, xii, 99
punctatum, xvii, 185
Myrrh adulterated, xv, 43; xvi, 325; xvii, 154
powdering of, xvii, 154
Myrsinaceæ, xii, 107
Myrsineæ, xi, 90
Myrtaceæ, x, 96; xv, 179; xvi, 177; xvii, 154

Nadand, J. W., deceased, xvi, 22
Naiadaceæ, xii, 113
Names of persons proposed for membership, ix, 2, 17, 30, 33, 41, 43, 45; x, 10, 22, 41; xi, 20, 21; xii, 18, 19, 29; xiii, 20, 21, 37, 64, 76; xiv, 18; xv, 20, 52; xvi, 18, 108; xvii, 19, 45, 81, 115
without vouchers withdrawn, ix, 2
Napellina, xii, 95
Naphthalene, xvi, 273; xvii, 230
uses of, xvi, 49
Naphthometer, x. 39
Narceina, xii, 163; xiv, 159; xv, 197
Narceine, xv, 242
Narcotic extracts, xiv, 148
alcoholic, xvii, 145
fluid extracts, ix, 44, 213
Narcotics, notes on, x, 67
Narcotin, xvii, 262
splitting of, xvii, 262
Narcotina, x, 163. 186; xi, 106, 150
estimation of, xii, 180
Narthecium ossifragum, xi, 96
Narthex assafœtida, xi, 75; xii, 101; xv, 179
Nasturtium officinale, xi, 177
Native antimonious acid, xv, 193
country of the potato, ix, 91
sugar-cane, xvi, 202
wine from garden rhubarb plant, xiii, 220
Natural borate of lime, ix, 110
fruit essences, xv, 167
iodine wine, x, 75
organic bases or alkaloids, xvii, 258
philosophy, xvii, 279
Nature of opium, xvii, 180
printed British seaweeds, ix, 81
Necrological notices, ix, 7, 69; x, 15, 58; xi, 24; xii, 22; xiii, 28; xiv, 21; xv, 27; xvi, 131; xvii, 22
Nepeta glechoma, xi, 90
Nephrotium filix mas, x, 121
Nerium oleander, x, 117; xii, 109
New acetylic radical, xiv, 181
acid from urine, xiv, 180
alkalimeter, x. 90
anæsthetics, xiii, 137
apparatus for analysis of petroleum, xvii, 143
application of collodion, ix, 100
artificial light, xiv, 155
aspirator, xvi, 144
Belgian Pharmacopœia, ix, 97
Newcastle and Gateshead Branch Association, ix, 68
New cement, xiv, 155
certificate of membership recommended, xii, 42
Neynaber's pharmaceutical steam still, xiv, 41, 60
New color-test for blood, xvii, 269
delicate test for alkalies, xvii, 214
displacement apparatus, xv, 140
electrical machine, xiv, 145

New explosive mixtures, xvi, 152
Newland's, H. A., invitation to young men's hall, xiv, 28
Newly distilled spirits, x, 70
New metallic elements, ix, 110
methods of estimating sulphides, xiv, 186
organic analysis, xvi, 146
preparing ferri pulvis, ix, 100
mode of making some syrups, ix, 96
oil-lamp furnace, xii, 70
oleoresin, xiv, 192
organic acids, xiii, 129
oxychloride of bismuth, x, 153
photographic varnish, xvi, 151
plasters, ix, 99
process for making fluid extracts, xiv, 147
obtaining chlorine, xvii, 196
preparing nitrogen, xvii, 194
quadruple salt of copper and sulphurous acid, xii, 145
remedies as an educational means, x, 233
source of alcohol and illuminating gas, xv, 150
species of honey bee, ix, 90
specific gravity apparatus, by Persoz, xv, 141
spring clamp, xv, 141
stirring apparatus, xv, 140
sugar, ix, 118
test for cellulose, ix, 114
vegetable alkaloids, ix, 121
uric acid, xiv, 188
use of gun-cotton, ix, 96
paraffine and naphthaline, ix, 121
for prussic acid, ix, 127
New York College of Pharmacy, ix, 66; x, 192; xi, 173; xii, 185; xiii, 146
law respecting practice of pharmacy in New York City, xvi, 332
Nickel, ix, 106, 113; x, 149; xi, 123, 164; xiii, 125; xvi, 228; xvii, 225
atomic weight of, xi, 123
Nickel sulphate, a sedative, xvii, 225
test for, xiii, 125
volumetric estimation of, xii, 178
Nicotiana tabacum, x, 116; xi, 92; xii, 108; xvi, 191
Nicotina, x, 106, 163; xv, 245
determination of, in tobacco, ix, 121
preparation of, ix, 116
Nichols, James R., on internal revenue law, remarks, xiii, 87, 91
Nigella sativa, xi, 72
Niobium, xiv, 178
Nitrate of ethylic oxide, x, 159
lead, xv, 196
potassa, xi, 102; xv, 195, 209; xvi, 221
pseudo-morphia, xvi, 260
silver, x, 154; xi, 127
adulterated, ix, 143
in nervous headache, xiii, 139
soda, x, 127; xii, 139; xiv, 173
thallium, xvi, 234
Nitrates, detection in water, xvii, 193
Nitric acid, x, 140, 179; xi, 111, 158; xii, 134, 175; xv, 201
in natural binoxide of manganese, ix, 112
Nitride of iron, xiv, 176
Nitrite of amyle, xii, 128
amylic oxide, x, 160
ethylic oxide, x, 160
lead, xv, 219
soda, xv, 210
Nitrites, xi, 110
determination of, xiv, 186
Nitrobenzole, x, 160; xi, 135; xii, 152; xiii, 130; xv, 253
from oil of turpentine, ix, 120
Nitrobenzoleum, xi, 104
Nitrogen, x, 140; xi, 110; xii, 134; xiv, 168; xv, 201; xvi, 213
in algæ, xvii, 166
excretion of, xii, 170
a fertilizer, xii, 173
in the soil, xi, 153
preparation of, xvii, 194
protoxide, xii, 134
liquefaction of, xiii, 117
Nitrogenous nourishment of plants, xvi, 286
Nitro-glucose, xvi, 279

Nitro-glycerine, x, 161; xi, 135; xii, 155; xiv, 181; xv, 252; xvii, 242
non-explosive, xiv, 181
Nitro-mannite, xi, 145
Nitro-muriatic acid, xi, 115
Nitro-prusside of sodium, xv, 228
Nitro-prussides, xv, 228
Nitrous acid, x, 178; xii, 134; xv, 201; xvi, 213
oxide, xi, 111
conversion into nitrate of ammonia, xiv, 169
Nitroxyphenyl sulphuric acid, xvii, 236
Nodules of phosphate of lime, x, 177
Nominating committee appointed, ix, 4; x, 17; xi, 26; x, 25; xiii, 30; xiv, 28; xv, 22; xvi, 25; xvii, 25
Nomination of officers, ix, 18; x, 22; xi, 31; xii, 29; xiii, 43; xiv, 37; xv, 33; xvi, 41; xvii, 38
amended list of, xvi, 44
discussed, xv, 34; xvi, 43
Non-existence of pyro and meta-arseniates, xii, 149
Non-metallic elements, x, 128, 138; xii, 120, xvii, 190
impurities in refined copper, xii, 144
Non-polarizing sugar, xii, 163
Normal propyl alcohol, xvii, 234
Note on citrine ointment, ix, 97
by committee, on general character of display, xvii, 284
chairman of committee on progress of pharmacy, xiv, 194
on culture of saffron, xiv, 76, 254
oxide of ammonia, xiv, 76, 245
liquor bismuthi, xiv, 76, 252
narcotics, x, 67
rhubarb, xvi, 86, 452; xvii, 46, 398
sophistication of ol. succini, xiii, 149
supply and quality of drugs for year 1867–68, xvi, 323
Notice of Mr. Herbruger's action in sending specimens of drugs, xvi, 124
of Massachusetts College of Pharmacy, xvi, 368
pill machine of A. H. Wirz, xv, 109
Notices, prefatory, ix, 13; x, 3; xi, 15; xii, 13; xiii, 13; xiv, 13; xv, 14; xvi, 15; xvii, 16
to report on progress of pharmacy, xvii, 123
of new English books, ix, 71, 81
French books, ix, 81, 83
German books, ix, 83, 84
some pharmaceuticals, xii, 40
Notification of resignation of permanent secretary, xvii, 99
Nova Scotia mineral waters, xii, 119
Nucin, xvi, 198
Nucis vomicæ tinctura, x, 73
Numerical relation of equivalent numbers, ix, 109
Nutmegs, xvi, 326
Nuttall, Esq., Thomas, deceased, ix, 70
Nux vomica, x, 117; xvi, 326

Oabig bark, xiii, 110
Oak bark, xii, 203
Obituary notices, ix, 7; x, 15; xi, 24, xii, 22–25; xiii, 28; xiv, 21; xv; 27; xvi, 131; xvii, 22
Obituary notice of J. H. Anderson, xv, 28
Franklin Bache, xii, 23
James Balmer, xiv, 20
J. W. Barry, x, 16
Francis O. Bigelow, xi, 23
John T. Brown, ix, 7
Botanists, xvii, 274
Charles T. Carney, xi, 23
Wm. F. Clency, xiii, 28

Obituary notice of chemists, xvii, 274
W. S. Coen, x, 15
N. Cressman, xiii, 28
A. Cushman, x, 16
John P. Dodge, xi, 23
R. B. Easterbrook, xvi, 21
L. M. Emmanuel, xvii, 22
England, x, 58
Thomas Farrington, xv, 27
George B. Fish, xiv, 20
H. F. Fish, xvi, 22
France, x, 59
Wm. Gay, xiii, 28
Germany, x, 59
L. Groeneweg, xiv, 20
F. A. Hegeman, xi, 23
H. E. Hill, xvii, 22
Holland, x, 60
F. L. John, xiii, 28
Charles A. Junghanns, x, 15
Asbury Kent, ix, 7
R. C. Kennedy, xvi, 21
Henry King, xiv, 28
E. E. Knapp, xi, 23
Joseph Laidley, xi, 23
James B. Lane, xv, 27
Wm. B. Little, xv, 28
Wm. Longshaw, xiii, 28
James T. Maxwell, ix, 17
J. C. McIntyre, xi, 23
John Meakin, xii, 22
James W. Nadand, xvi, 22
Wm. J. Olliffe, xiv, 20
A. G. Palmer, ix, 7
Obituary notice of S. R. Philbrick, ix, 7
pharmacists, xvii, 275
L. Phillips, xiii, 28
physicists and philosophers, xvii, 274
James L. Polhemus, xv, 28
J. Lindley Pyle, xiv, 20
F. Rollman, xiii, 28
Jesse M. Sands, xv, 28
Harmar Scully, xv, 28
C. R. Smith, x, 15
E. R. Smith, xvii, 22
A. M. Stevens, ix, 7
R. W. Stevens, xvi, 21
Thomas A. Sweetser, xv, 27
Dr. R. P. Thomas, xii, 24
United States, x, 58
S. B. Waite, xi, 23
George W. Weyman, xii, 22
Daniel F. White, xiii, 28
G. C. Wilson, xiii, 28
G. D. Wood, xi, 23
S. H. Woods, xvii, 22
zoologists, xviii, 275
Objection to publishing matters not reported to Association, xvii, 27
Obligations of pharmacists to instruct those in their employ, xiii, 190
Observations on Dica's Liverpool hydrometer, ix, 216
fermentation, ix, 114
miscellaneous, xii, 90
on oleum ætherum, xii, 49
Odor of commercial tannic acid, xii, 255
horseradish, ix, 120
Odors, ix, 117
Oenanthic acid, ix, 113; x, 156; xi, 137
Oenanthylic alcohol, xi, 134

Oenanthylidene, xvi, 275
Oenothera berteriana, xvi, 198
Officers of Association, '60, '61, ix, 3
'61, '62, x, 3
'63, '64, xi, 3
'64, '65, xii, 3
'65, '66, xiii, 3
'66, '67, xiv, 3
'67, '68, xv, 3
'68, '69, xvi, 3
'69, '70, xvii, 3
elected, ix, 19; x, 23; xi, 32; xii, 30; xiii, 44; xiv, 38; xv, 38, 39; xvi, 44; xvii, 40
since orgaization, ix, 4; x, 4; xi, 7, 8; xii, 7, 8; xiii, 7, 8; xiv, 7,8; xv, 7, 8; xvi, 5, 6; xvii, 5, 6
Officinal powders, xvi, 162
spirits, x, 195
Oil of almonds, xv, 198; xvi, 328; xvii, 150
amber, xiv, 194
amber sophisticated, xiii, 149
anise, xiv, 194; xv, 185
apricots, xiv, 191; xv, 198
benne, x, 204
bitter almonds, xiv, 194; xv, 256; xvi, 183; xvii, 152
cacao, xvi, 183
cajeput, x, 162; xvii, 181
cassia, xvi, 328
castor beans, xvi, 326
flavored, xiv, 192
supply of, xvi, 272, 285
chamomile, xii, 157
citrus lumia, x, 161
cloves, x, 162; xvi, 326
cod-liver, xv, 204; xvi, 326
flavored, xiv, 192
supply of, xv, 272, 285
cotton seed, x, 83
essential, xiv, 193, 194
Oiled paper, x, 87
Oil of gaultheria, xii, 157; xvi, 255
horse chestnuts, ix, 88
Indian hemp, xi, 70
jellies, x, 80
of juniper, a vehicle for iodine, ix, 97
ledum palustre, xvii, 172
lemon, xvi, 329
levant wormseed, xii, 458
mace, xi, 132
mustard, xii, 157; xvii, 152
artificial, xvii, 257
nutmegs, xii, 157
Oil of olives, x, 190; xiv, 193; xv, 185, 285; xvi, 192, 326
test for, xvii, 150
palm, xvii, 149
of pennyroyal, xii, 157
peppermint, xi, 132; xvii, 151
crop of, xiii, 221
experiments on, ix, 101
pimento, xiii, 112
Peru balsam, xvii, 152, 185
phosphorated, xvii, 150
rape, x, 190
of rose, xvii, 181
manufacture of, ix, 88
rue, xi, 132
sassafras, ix, 40; x, 209; xii, 201; xiv, 211; xv, 256
sesame, xvii, 149
stillingia, xvi, 160
thyme, xvi, 329
turpentine, x, 118; xiv, 192; xvi, 192, 276
wine, changes in, ix, 146
heavy, xiii, 129
wormseed, Levant, xii, 188
Baltimore, xii, 202
wormwood, xii, 106; xvi, 327
yellow sandalwood, xiv, 163
Oils essential, xiv, 193, 194
fatty, xvii, 148
extraction of, xvii, 149
purifying of, xvii, 150
fixed, xii, 80; xv, 198
adulteration, xii, 157
fluidity of, xii, 80
solution in, x, 71
volatile, xi, 132, 212; xii, 79, 157; xiii, 135; xv, 198, 246, 285; xvii, 330
adulteration of, xii, 80; xv, 48; xvii, 151
detection of alcohol in, xii, 80
coloring matter of, xii, 158
optical properties of, xii, 158
recovery of, xii, 79
yield of, xii, 80
Ointments, xiii, 108
and cerates, preservation of, xiii, 175
plasters, xvii, 152
benzoinated, xv, 151, 385; xvi, 153
boxes, new, xvii, 120

Ointments, carbuncle, xiii, 108
Holloway's, xvii, 164
of iodide of potassium rendered permanent, xvii, 152
Judkin's, xv, 151
made with yellow wax, xiv, 153; xvi, 116, 416
of mercury, xii, 89; xv, 152
red oxide, xiv, 153
Ointment for neuralgia, Dr. Gray's, xvi, 153
preparation of, xii, 87
preservation of, xii, 87; xvi, 153
for rheumatism, xii, 87
vermin, xvi, 153
vulnerary, xvi, 153
Oleaceæ, x, 118; xi, 93; xii, 109; xv, 185; xvi, 192
Olea destillata, x, 138, xvii, 339
Europæa, x, 118; xi, 93; xv, 185
Oleæ corticis, ext., x, 77
Oleate of binoxide of mercury, ix, 96
soda, xiv, 173
Oleic acid, xv, 238
Oleo-resinæ, xv, 154; xvii, 339
Oleum æthereum, ix, 146; xii, 309; xvii, 322
anisi, xiv, 194; xvi, 185
cajeputi, x, 162
cannabis indicæ coctum, xi, 70
croton. tiglii, xi, 79
gossypii, x, 83, 237
hypogeæ, xvi, 181
morrhuæ ferratum, x, 71
vesicans, xi, 70
pini pumilionis, xi, 94
sylvestris, xi, 104
sesami, x, 204
sinapis, xvii, 373
succini rect., xiv, 194
adulterated, xiii, 149
terebinthinæ, x, 118; xiv, 192; xvi, 192
theobromæ, xv, 108, 347
Olliffe, Wm. J., deceased, xiv, 21
Olive oil, x, 190; xiv, 193; xv, 285
adulteration of, xii, 80
Olives, x, 176
Omission from roll of members, xii, 33
On active principle of rhus toxicodendron, xiii, 166
apparatus for regulating the temperature below the boiling-point, xiii, 135
On boiling-point of liquids, x, 67
camphor-water, xiii, 153
climatology of the vine, xii, 99
composition of gutta percha, ix, 119
contamination of hydrochloric acid with sulphuric and other sulphuric oxides, xvi, 409
corks, xvii, 358
culture of benne, ix, 224
deposit in fluid extract of cloves, xvi, 385
dispensing phosphorus, x, 203
extraction and preservation of aromata, xiii, 135
French brandy and whisky, xii, 49
leaves of podophyllum peltatum, xvi, 417
manufactures of U. S. army laboratory at Philadelphia, xii, 49
masking the nauseous taste of Epsom salts, xvii, 382
means of improvement for young pharmacists, xvi, 380
lactuca elongata, xvi, 405
officinal spirits, x, 195
Onograceæ, xvi, 198
On pharmaceutical glassware, xvii, 355
preparations of Lactuca Canadensis, xvii, 384
Pharmacopœia strength of brandy and whisky, xiii, 222
preparation of pyrophosphate of iron, xvi, 403
protection against moths, xvii, 365
quality of sherry wine, xii, 49
salts of conia, xvi, 412
the so-called oil of stillingia, xvi, 460
some applications of glycerin, x, 87
medicinal spirits, xii, 49, 303
the substitution of calamus and asarum for other aromatics, xvii, 384
suppositories, xvi, 401
testing for arsenic, xii, 177
tobacco, xii, 223
use of glycerin to prevent apotheme, xiii, 156
yellow wax in ointments, xvi, 416

On the value of extracts, x, 78
Operations and processes, xvii, 139
Ophthalmic ointments, xi, 68
Ophthalmicus spiritus, Himly, x, 71
Opiated wine of colchicum in rheumatism, ix, 93
Opiatus syrupus, x, 78
Opiferque per orbem dicor, xvi, 420
Opii emplastrum, x, 85
vinum, x, 74
Opium, xi, 181, 192; xv, 173, 283; xvi, 326
adulterated, xvi, 176
with lead, xvii, 178
shot, ix, 142
alkaloids, xvii, 260
American, xv, 378; xvi, 176
assay of, xvii, 178
culture of in United States, xiii, 51; xvii, 176
depreciation in strength of Smyrna, ix, 169
eaters, ix, 126
estimation of morphia in, xiv, 190
made in New Hampshire, xiii, 52
Virginia, xiv, 76, 233
morphia strength of, xvi, 96, 392
nature of, xvii, 180
Oriental, xvi, 194
price of, xv, 283
production in Germany, xvii, 177
United States, xvi, 178
as a therapeutic agent, ix, 90
Virginia, xiv, 76, 233
Opodeldoc chloroformatum, xvi, 159
iodized, xv, 156
Opoponax resin, xv, 257
Optical behavior of artificial tartaric acid, ix, 123
properties of volatile oils, xii, 158
Orange-flower water, xiv, 148
Orchidaceæ, x, 119; xii, 113; xv, 188
Orcin, xv, 264; xvi, 282
Organic acids, x, 133, 156, 185; xii, 126, 153, 179; xiii, 129; xv, 196, 230; xvi, 243; xvii, 247
and compounds, xi, 136
alkalies, xv, 197
alkaloids, x, 136, 162, 186; xii, 158, 180
Organic alkaloids and other bodies, xii, 128
analysis, x, 184
bases, xv, 240; xvi, 258; xvii, 257
chemistry, ix, 113; x, 155; xiii, 128; xiv, 179; xv, 227; xvi, 239; xvii, 197
coloring principles, xvii, 266
compounds, x, 133; xii, 125, 151; xv, 196
elementary analysis, xv, 146
substances, xi, 166; xiv, 188
and chemicals, xi, 104
Organo-metallic bodies, ix, 114
radicles, ix, 144, 122
Origin of infusoria, xvii, 164
rock salt, xvii, 213
Ornus Europæa, x, 118; xii, 109
Orpiment in burns, ix, 128
used in coloring cakes, ix, 128
Orval, eau d', x, 74
Orvis, P. D., circular, ix, 73
Osmazème glacée, xiv, 149
Osmic acid, xv, 229
Osmium, xv, 193, 226, 227
ruthenium, palladium, and iridium, ix, 106
Ostrich, gizzard of, xv, 400
Otto of roses, test for, xiv, 192
Outfit of apparatus, x, 202
Ovum, xv, 192
Oxalate of ammonia, xi, 137
cerium, ix, 89, 106
copper, x, 156; xi, 137
ethyl, xi, 138
iron, xv, 197; xvii, 389
in medicine, xv, 407
protoxide of iron, xv, 231
pseudo morphia, xvi, 260
thallium, xvi, 245
Oxalic acid, x, 156; xi, 137; xii, 154; xiv, 179; xv, 231; xvi, 244; xvii, 250
Oxalidaceæ, x, 102
Oxalis anthelmintica, x, 102
Oxidation of acetic acid, xvii, 247
by means of charcoal, xvi, 149
of hydrochloric acid, ix, 107
through fixed oils, ix, 103
Oxide of amylene, ix, 115
amylic, x, 160
bismuth, x, 153
copper, x, 150

Oxide of copper, Schweizer's solution of, ix, 106
ethylene, ix, 115
Oxides of the heavy metals, x, 182
iron as a means of conveying oxygen, ix, 109
Oxide of lead, xii, 146
magnetic chrome, x, 151
mercury, red ointment of, xiv, 153
propylene, xv, 252
Oxide, reduction of, by H., xvii, 143
of silver, xiii, 150
in crystals, xii, 15
Oxides of tungsten, xv, 221
Oxide of zinc, x, 150
plaster, xvi, 162
Oxyacanthia, ix, 164
Oxycoccus macrocarpus, xi, 87
Oxygen, x, 138; xi, 108; xii, 130; xiv, 166; xv, 199; xvi, 211; xvii, 19
burning of iron in, xiii, 124
as an antidote for ether and chloroform, ix, 129
physiological action of, xii, 130
preparation of, xii, 130; xvii, 191
pure, xvii, 190
transfer of, in body, xii, 170
Oxygenated saline waters, xiv, 156, 166
Oxygenium, x, 128; xi, 100
Oxychloride of lead, xii, 146
silicium, xvi, 219
Oxycinchonia, xii, 161
Oxyphenylen-disulphonic acid, xvi, 256
Ozone, x, 139, 178; xi, 108; xii, 130; xiv, 167; xv, 200; xvi, 212; xvii, 192
ignition produced by, xii, 132
influence on vegetation, xii, 132
in plants, xi, 153
produced by combustion of ether, ix, 109
produced by plants, xv, 266
test for, xii, 138
Ozonic ethers, xvii, 148
Ozonium, xi, 100
Ozonized oils, ix, 91

Pagliano's syrup, xii, 83
Pagliari's mixture for the preservation of animal matters, xii, 91
Painted toys, ix, 127
Palicourea margravii, xv, 181
noxia, xv, 181
Palladammonium cyan., xvi, 240
Palladio-bichloride of potassium, xvi, 239
Palladium, xv, 226; xvi, 239
compounds of, xvi, 239
Palmaceæ, xi, 95; xiii, 116; xv, 202
Palmer, A. G., death of, ix, 7
Palmitin in rye, xvii, 236
Palm oil, bleached by chromic acid, xvii, 149
Palomao, xvi, 188
Panax colensi, xv, 179
ginseng, x, 95
quinquefolium, xi, 76; xvi, 178
Pancoasti styptic, xii, 89
Panis laxans, x, 81
Papaveraceæ, x, 92; xi, 73; xii, 96; xiv, 158; xv, 173; xvi, 174; xvii, 176
Papaverina, xvii, 261
Papaver rhæas, xiv, 159
somniferum, x, 92; xi, 73; xii, 96; xiv, 158; xv, 178; xvi, 174; xvii, 176
Papaverina, effects of, xvii, 261
Paper anti-asthmatic, xii, 90
Paper as an analytical agent, xii, 174
blistering, x, 85
on collodion, xvii, 46
colocynth resinoid, x, 32
compound elixir of taraxacum as the best vehicle for quinine, xvii, 97
extract of beef, xvi, 119
golcoine or glyconine, xvii, 119
hangings, arsenic in, ix, 128
on hydrastis Canadensis, x, 42
hydrated sesquioxide of iron preserved by glycerin, xv, 91
indigenous drugs, xv, 85
influence of hypodermic injection on the science of toxicology, xiv, 78, 237
iodide of ammonium, xiv, 245
jalap, xv, 83
lac sulphuris, xv, 83
lead in flour, xiv, 76, 255
liquor bismuthi, xvi, 120
medicinal substances, x, 122
the method of teaching pharmacy, xii, 49
morphia, strength of powdered opium, xvi, 96

Paper, oiled, x, 87
on ol. succini, xiii, 50
profession of pharmacy, xvi, 81; xvii, 97, 412
relative proportion of digitalin present in American and foreign digitalis, xvi, 413
salt interest of Saginaw Valley, Michigan, xvii, 114
Southern prickly ash bark, xii, 49
waxed, x, 87
on weights, xvii, 93
whisky, brandy, and sherry wine, xiv, 78
sp. gr. of chloroform, and statistics of U. S. army laboratory at Philadelphia, xiv, 78
Virginia opium, xiv, 76
Papier épispastique supérieure d'Abespeyres, xvii, 165
Paracacy for snake-bites, ix, 92
Paraffin, xi, 130; xii, 152; xiii, 130; xiv, 150, 181, 189; xv, 199, 255; xvi, 206
in beeswax, xiv, 189
ointments, xvii, 152
pharmacy, ix, 23
preserved meat, xiv, 147
its purification, ix, 127
solubility, ix, 114; xiii, 130
as a substitute for spermaceti and wax, xvii, 152
as a substitute for wax in cerates, ix, 163
Paris Codex, xv, 123
quadrifolia, x, 120
Parrish, Edward, on aloine, ix, 163
apparatus, x, 200
balance without weights, xii, 318
brandy substitute, xii, 257
capsicum, xii, 262
coal oil testings, x, 207
course of study, xii, 273
culture of benne, ix, 124
discourse on titles, xiv, 76, 237
Parrish, Edward, inaugural address, xvi, 45
on instrument for filtration, xiii, 178
means of improvement for young pharmacists, xvi, 389
patents in pharmacy, ix, 163
plea for the handmaiden, xi, 271
remarks about alcohol, ix, 24
remarks on local secretaryship, xiv, 26
remarks on methylated spirits, xiii, 224
remarks on new order of members, ix, 27
remarks on new remedies, x, 233
remarks on pharmaceutical education, xiv, 39
remarks on subject of poisons, ix, 52
report on internal revenue law, xi, 260; xiii, 89; xv, 308
on pharmacy, ix, 77
Pasta gummosa, xvi, 154
Paste, cheap, xi, 61
of chloride of zinc, xv, 151
preservation of, xii, 91
Pastilles, x, 82
Pastilli ministrorum, xi, 69
Pâte iodifère, x, 86
Patents, in their relations to pharmacy, ix, 63
Paullinia sorbilis, xi, 77; xiv, 159; xvi, 181
Peanut oil, ix, 101
Peat, utilization of, xvi, 152

Peculiarities of good powdered rhubarb, xvi, 87
Pedaliaceæ, x, 114; xv, 183
Peganum harmala, xi, 81
Pellæa andromedæfolia, xvi, 203
Pencils of tannin, ix, 96
Penghawar jambi, ix, 93
Peninsular and Independent Medical Journal, ix, 71
Pennsylvania Institution for Blind, invitation to visit, xvi, 37
law relative to practice of pharmacy in Lycoming County, xvi, 333
petroleum, analysis of, ix, 123
Pentachloride of antimony, xiv, 178
Pepo as a remedy for tænia, xiii, 110
Pepper, ground, x, 189
Peppermint, crop of, xiii, 221
Pepsin, xv, 265
Perbromic acid, xii, 136
Percentage of alkaloids in cinchona, xi, 88
water in glycerin at respective specific gravities, xvii, 240
Perchloric acid, x, 142; xiii, 118
Perchloride of iron, ix, 94, 96; x, 80; xv, 219; xvi, 143
and collodion, xii, 90
as a disinfectant, ix, 107
manganese, xiv, 176
thallium, xv, 219
Percolation, xii, 72, 283; xvii, 305
of colchicum seed, xiii, 211
officinal, xiii, 219
powdered Calisaya bark, xiii, 214
Percy, Dr. S. R., remarks on sale of poisons, ix, 51
remarks on veratrum viride, x, 222
Perfectly pure oxygen, xvii, 190
Periandra dulcis, xvii, 185
Periodicals referred to in report on progress of pharmacy, x, 53; xi, 50; xii, 56; xiii, 97; xiv, 96; xv, 125; xvi, 130; xvii, 124, 126
Periodic acid, xv, 204
Permanganate of barium, xii, 141
potassa, x, 148; xiii, 125; xiv, 176; xv, 196, 214; xvi, 210, 226, 236
Permanganate of potassa for deodorizing alcohol, xvi, 114, 393
in disinfecting ulcers, xiii, 120
in gonorrhœa, xiii, 120
Permanganic acid, x, 148; xi, 122; xii, 143
Permanent and standing committees for 1860–61, ix, 3
1862–63, x, 3
1863–64, xi, 9
1864–65, xii, 5
1865–66, xiii, 5
1866–67, xiv, 5
1867–68, xv, 5
1868–69, xvi, 4
1869–70, xvii, 4
Permanent committee on Pharmacopœia, xi, 42
Permeability of iron to hydrogen, xii, 134.
Pernè's antiseptic liquid, xvi, 167
Peroxide of hydrogen, xiv, 168; xvi, 208
manganese, xvi, 226
potassium, xi, 116
sodium, xi, 117
Persea gratissima, xv, 186
Persian berries and madder, ix, 92
opium, xvi, 175
Personal notices in France, x, 57
Germany, x, 57
United States, x, 57
Persulphate of iron, x, 149
hydrogen, xvii, 205
Peruvian gum, xvii, 189
Pessaries, xi, 70; xiv, 145
Petalostigma quadriloculare, xv, 187
Petasites officinalis, xii, 106
Petrole, xv, 255
Petroleum, composition of, ix, 119
xi, 129; xii, 88, 119; xiii, 131; xiv, 166; xv, 255; xvi, 275
deodorizing, xii, 151; xiv, 147
as a dressing to wounds, xii, 88
oil, xiv, 189; xvi, 275
use of, xiv, 166
products, xii, 151

Petroleum, Wayne's analysis of, ix, 123
Pettenkofer's test, x, 172
Phalaris Canariensis, xii, 114
Pharmacists, instructions of, xvi, 115, 389
Pharmaceutical apparatus, xvi, 375
Association, Washington, ix, 67; x, 194
Association, Buenos Ayres, xii, 59
Association, District of Columbia, xv, 18
business, its management, xiv, 201
chemistry, xvii, 190
and chemical apparatus, x, 201
Conference of Great Britain, xii, 58
Congress in 1867, xiv, 34
Congress, delegates to, xiv, 70
herbaria, xiv, 147
education, xiv, 39
legislative statistics and prize subjects, xvii, 269
literature, ix, 71; xvii, 275
preparations, xvi, 373
preparations on exhibition, xv, 319
Society of Great Britain, ix, 68
still, xiii, 106
weights, xii, 73
Pharmaceutist as a merchant, xii, 216
Pharmacognosy, xvii, 165, 275
Pharmacopœias and commentaries, xvii, 275, 276
Bavarian, ix, 74
British, ix, 73; xv, 124
committee on, appointed, xi, 42
decimal weights for, xvi, 34, 76
of Great Britain, xi, 51
French, xv, 123
Prussian, ix, 75
report on, xvii, 298
resolutions concerning, xi, 43
Pharmacopœias, revision, ix, 13
notice of, ix, 73
Russian, xv, 123
universal, xvi, 33
U. S., ix, 74; xi, 50
drugs recommended for, xvii, 369
fidelity to, xiii, 193
Pharmacy, ix, 97; x, 66; xi, 59; xii, 70; xiii, 70; xiv, 144; xv, 138; xvi, 143; xvii, 136, 275
dental, x, 67
essay on, xvii, 97, 412
in Australia, xv, 124
as a profession, and discussion thereon, xvi, 81, 85; xvii, 97
practical, xvii, 128
report on progress of, ix, 65; x, 16, 49; xi, 27, 34, 49; xii, 33, 56; xiii, 22, 46, 97; xiv, 39, 139; xv, 21, 40, 123; xvi, 20, 25, 129; xvii, 21, 41, 123
Phasianus gallus, xii, 116
Phellandrium aquaticum, ix, 124
Phenamina, x, 162
Phenates, xvii, 235
Phenic acid, xvi, 255
as a remedy for insect stings, xiii, 129
vinegar, xiv, 152
Phenol, xvii, 234
antidote, xvii, 236
therapeutics, xvii, 236
Phenyl, xi, 130
Brown, xiv, 180
Phenylic alcohol, xi, 135
Phenylmonoborate, xvi, 268
tolylamine, xv, 247
triborate, xvi, 268
Philadelphia College of Pharmacy, ix, 65; x, 191; xi, 173; xii, 185; xiii, 146; xiv, 199; xv, 18; xvi, 17; xvii, 17
Phillbrick, Samuel R., death of, ix, 7
Phillips, S., deceased, xiii, 29
Phillyrin, x, 166
Phillyrea, x, 118
Phlorbaphen, xvii, 252
Phloridzin, xii, 127
Phloroglucin, xi, 145; xvi, 282
Phlorrhizin, xi, 107

Phonographic reporter employed, x, 27
Phormium tenax, xv, 189
Phosphates, x, 174; xv, 205
in decoctions, xii, 77; xiii, 117
fossil, x, 177
Phosphate of iron, ix, 90
lime, ix, 90; xiv, 171
nodules, x, 177
in plants, xii, 172
Phosphates in medicinal decoctions and infusions, xiii, 117
Phosphate of soda, xi, 118; xvi, 222
thallium, xvi, 234
Phosphide of calcium, xv, 211
preparation of, ix, 108
zinc, xvi, 211, 229
Phospho-bases, x, 165
Phospho-molybdic acid, x, 186, 229; xii, 148; xvi, 236
as a test for alkaloids, x, 42
molybdate of ammonia, x, 152
Phosphorated oil, xvii, 150
Phosphorescence, xv, 205
Phosphoric acid, x, 142, 180; xi, 101, 114, 161; xii, 175; xiv, 171, 184; xv, 192, 205; xvi, 218; xvii, 208
Phosphorous acid, xv, 206; xvi, 218
Phosphorus, x, 128, 142, 180; xi, 113, 160; xii, 136; xiii, 117; xiv, 170, 188; xv, 195, 204; xvi, 209, 218; xvii, 206
black, xiv, 170; xvii, 207
comminution of, xv, 113
chlorosulphide, xiv, 206
detection of, xvii, 207, 208
dietetic properties of, xiii, 138
dispensing of, x, 202
as a fertilizer, xii, 173
history of discovery and manufacture, ix, 111
hydride, xv, 205
manufacture, xvii, 206
matches without, xiii, 141
and nitrogen compounds as fertilizers, xii, 173
Phosphorus as a reagent, xvii, 207
red, xiv, 171
solvents for, xvii, 207, 208
tercyanide of, xii, 136
as a test for metals, xvii, 207
tests for, x, 180
white, xiv, 170; xvii, 208
with zinc, xiv, 188
Phosphuretted hydrogen, xv, 205
Photometric observations, xii, 174
Photographs, magic, xiv, 148
Phyllocyanic acid, xv, 263
Physiological action of oxygen, xii, 130
chemistry, xi, 169
and pathological chemistry, x, 169; xii, 168; xiii, 137
Physiology of common life, ix, 80
Physostigma venenosum, xi, 83; xii, 99; xiv, 160; xvii, 185
Physostigmia, xii, 162
Physostigmina, xv, 243
Phytolaccaceæ, xvi, 192
Picea vulgaris, x, 118
Picis liquidæ plasma, xi, 68
Pickles and preserves, x, 189
Picramic acid, xvi, 248
Picrate of potassa, xvi, 248
Picric acid, xi, 141; xii, 153; xiv, 189; xv, 236; xvi, 206
Picrotoxin, xi, 168
Pigments, x, 173
Pile, W. H., Dr., liq. ammon. acetatis, xiv, 47, 226
Pile's, Dr., remarks about percentage in whisky and brandy in the United States Pharmacopœia xiii, 76, 222
on revenue law, xiii, 87
on Dicas hydrometer, ix, 216
specimens and apparatus to be described by committee on specimens, xiii, 82
Pill boxes, new, xvii, 120
machines, xv, 375; xvii, 153
Pills, x, 81; xii, 85, 287; xiii, 106; xiv, 152; xv, 159; xvi, 161; xvii, 153
of ammon. carb., ix, 96
antispasmodic, xvi, 161

Pills, Becquerel's gout, x, 82
calomel, xvii, 154
of carbolate of quinia, xvi, 161
coated with gelatine, xvii, 119
coating of, x, 81; xv, 159
of extract of cod-liver oil, xiv, 152
of cod-liver oil, x, 81
Holloway's, xvii, 164
of iodide of iron, ix, 97; xii, 85; xv, 160; xvi, 161
Lartigue's rheumatic, x, 82
metrorrhagic, Bean's, x, 82
nitrate of silver, xii, 86; xv, 161
phosphorus, xii, 86
podophyllum, xvi, 161
protocarbonate of iron, xv
roller and cutter, xvi, 468, 160
saccharate of iron, xv, 160
silver nitrate, xv, 160
sedative, x, 82
of U. S. Pharmacopœia, xvii, 339
Wright's Indian Vegetable, xii, 86
Pilulæ, xi, 67; xvi, 339
Pilulæ copaibæ, xi, 67; xv, 159
ferri, xi, 67
carbonatis, xiii, 106
iodidi, ix, 97; x, 81; xi, 67; xii, 85; xiii, 106; xv, 160; xvi, 161; xvii, 340
Pilulæ hydrargyri, xii, 86; xvii, 340
metallorum et amararum, xv, 160
podophyllini composit, xvi, 161
quiniæ sulphatis, xvii, 341
Pimelic acid, xvi, 254
Pimeline, xv, 198
Pimpinella anisum, x, 95
saxifraga, x, 95
Pingo pingo, xvi, 189
Pint, imperial, x, 67
Pinus, xi, 94
abies, xi, 94
palustris, xii, 113; xvi, 199
pumilis, x, 118; xi, 94
sylvestris, xi, 94
Piperaceæ, x, 106; xi, 85, 106; xii, 110; xiii, 112; xvi, 193
Piper angustifolium, x, 106
cubeba, xii, 110; xvi, 193
Piperic acid, x, 158; xi, 140
Piperina, x, 137, 164
Piper methysticum, x, 106; xi, 85
nigrum, x, 106, xi, 85
Pisces, x, 124; xi, 99; xii, 117; xvi, 204
Pistacia lentiscus, x, 104
fixed oil of, ix, 91
terebinthus, x, 104
Pitch, xii, 152
Burgundy, xv, 283; xvi, 199
Place of meeting, ix, 32, 37, 38; xi, 36; xii, 40; xiii, 74, 75; xiv, 68; xv, 105; xvi, 110; xvii, 100
Plan and description of balance for apothecaries' uses, xii, 316
Plantagineæ, xii, 107
Plantago major, xii, 107
Plant, California beer, ix, 91
influence of drying, xvii, 143
assimilation of, x, 175
preservation of, xii, 92
Plasma, xiii, 108; xv, 152
cupri sulph., x, 84
extract. belladonnæ, x, 84
hydrargyri ammon., x, 84
oxidi, x, 84
subnitratis, x, 84
picis liquidæ, xi, 68
plumbi, x, 84
Plasters, x, 84; xii, 87; xiii, 109; xv, 161; xvii, 152
adhesive, xv, 159
arnica, xiii, 109
assafœtida, ix, 23
belladonna, xvii, 152
Plaster of cantharides, xv, 160
caoutchouc, xvii, 153
carbolic acid, xvii, 153
corn, x, 85
court, x, 85
lead, xv, 160
machine, xii, 231, 233
moulding of, x, 84
of pitch and cantharides, xv, 162
Plasters adhering to paper, xii, 87
breast, xii, 87
opium and belladonna, ix, 101
preparation and dispensing of, xii, 230
sticky, x, 84
zinc, xv, 160
Plastic charcoal for water filters, ix, 102
wood, xiv, 146
Platina metals, xii, 151

Platinum, ix, 107; x, 155, 184; xi, 128; xv, 226; xvi, 238
black preparations of, ix, 112
crucibles, xii, 174; xiv, 183
iridium, osmium, cyanides of, x, 155
metals, xii, 151
mirrors, xiv, 179
ores of California, x, 128
plated copper vessels, xv, 138
vessels, x, 87; xiv, 183; xv, 138
Plea for the handmaiden, xi, 42, 271
Plumbagineæ, xi, 90
Plumbago, xiii, 117
in ferri pulvis, ix, 109
Plumbate of soda, xvi, 232
Plumbi carbonas, x, 132
ceratum, x, 84
iodidi unguent., x, 83
Plumbic carbonate, xvii, 220
plasma, x, 94
Plumbum, x, 132
hydrico-acet. solut., xvii, 371
Podophyllaceæ, x, 92
Podophylli resina, x, 78
Podophyllum peltatum, ix, 124; x, 92; xi, 72; xii, 95; xiv, 158; xvi, 173
value of root, xv, 379
collection of, xvi, 86, 459
leaves of, xvi, 417
rootlets, xvi, 173
Poisons, animal, xii, 169
Poison bottles, xv, 83, 390; xvi, 145
Poisoning by acetate of lead, ix, 125
aconite root dust, ix, 128
extract, xi, 71
arseniuretted hydrogen, xii, 148
belladonna, xi, 74
bleaching powder, xi, 102
Burnett's fluid, xi, 102
opium, xi, 74
potato fruit, ix, 126
stramonium seed, ix, 126
Poisoning by tincture of aconite root, ix, 127
white precipitate, ix, 128
Poison oak and antidote, ix, 91
Poisonous calomel pills, xii, 86
effects of baryta salts and oxalic acid, xii, 169
perfumery, ix, 127
Polarization of light, ix, 109
Polhemus, James L., deceased, xv, 28
Polishing platinum crucibles, ix, 112
powder, xv, 149
Polychroit, xvi, 283
Polygalaceæ, xvi, 181; xvii, 181
Polygala senega adulterated with root of cypripedium pubescens, xvii, 181
Polygonaceæ, xi, 86; xiv, 163; xv, 186; xvi, 193
Polygonatum multiflorum, x, 120
Polygoneæ, xvii, 170
Polygonum aviculare, ix, 92
fagopyrum, xi, 86
Polyporus anthelminticus, xv, 191
Pomata contra varos, x, 84
Pomades, cerates, &c., xi, 61
Pongamia glabra, xi, 83
Poor guanos, x, 176
Poppy capsules, xii, 96
Populin, xi, 146
Porcelain dishes, preservation of, xvii, 141
Porphyroxin, xvi, 176
Portuguese publications, xv, 137
Postponement of replies to queries, xv, 58
Potash, xiv, 185
Potassa, xv, 209
Potassæ acetas, xvii, 341
acetatis liquor, x, 70
antimoniate of, x, 153
bicarbonas, x, 130; xi, 117
bichromas, xi, 102; xii, 122
bitartras, x, 157
from Catawba wine, xv, 80
carbonas, x, 144; xi, 116; xii, 121; xvii, 341
chlorate, x, 130; xi, 102, 115
and ammonia chromate, xii, 147; xiii, 124
citras, xvii, 341
detection of, x, 181
estimation of, xiv, 185
et ferri tartras, x, 134
fluo-chromate, xii, 138
free from silica, xii, 122

Potassa from marl, xi, 256
hypophosphis, xii, 122
liquor, x, 69, 144
pura, xvii, 341
Potassæ nitras, xi, 102; xv, 195, 209; xvi, 221
preparation of, xiv, 173
not precipitated by tartaric acid, ix, 110
picras, xii, 122
permanganas, x, 148; xii, 77, 121; xiii, 120, 125; xiv, 176; xvi, 210, 226
pure, x, 144
and soda, estimation of, xii, 177
tartras, xvii, 342
solubility of, xii, 138
Potassii bromidum, x, 129; xii, 121; xvii, 342
for giving sleep, xii, 121
cyanidum, x, 133; xii, 121
ferro-cyanidum, xii, 121, 125
iodidum, x, 129, 144; xii, 121; xvii, 342
preparation of, xiv, 172
iodidi ung., x, 83
sulphidum, x, 129
Potassium, x, 144; xi, 116, 163; xii, 138; xiii, 120; xv, 209; xvi, 221; xvii, 209
ammonium, xiv, 175
biniodide of, x, 144
bitartrate, xvii, 210
bromide, xv, 195; xvi, 208; xvii, 197
adulteration of, xiii, 119
chlorate, xvii, 209
chloride of, x, 144; xii, 119
cyanide, xvi, 208
ferridcyanide, xi, 129
ferrocyanide, xv, 227
iodide, x, 129, 144; xi, 116; xiv, 172; xv, 195, 209
nitrate, xvii, 209
perchlorate, xvii, 209
permanganate, xvii, 209
peroxide, xi, 116
salts of, U. S. P., xvii, 241
sulphocyanide, xiii, 120; xvi, 228
Potato flies, seat of vesicating principle in, ix, 90
starch, x, 168
Potentilla tormentilla, xvi, 183
Potent medicines, dispensing of, x, 66
Powdered camphor, ix, 41, 177; xii, 73
castile soap, xvi, 163
gum resins, xii, 73
narcotic extracts, xv, 154
opium, xii, 74
tartaric acid, xii, 74
Powdering drugs, xv, 142
mill, new, xv, 114
Powders, x, 67; xi, 60; xii, 73; xiv, 148; xv, 162, 286; xvi, 163; xvii, 154
fineness of, xvii, 366
officinal, xvi, 163
Ridgewood disinfectant, xii, 91
sulphurous, x, 68
Practical knowledge, ix, 97
Pharmacy, Parrish's, ix, 97
Precipitate, washing of, xvii, 137, 139
white, xvii, 210
Precipitation of chlorides, xi, 115
Prefatory notes, ix, 13; x, 3–7; xi, 15; xii, 13–16; xiii, 13–16; xiv, 13; xv, 14–16; xvi, 15; xvii, 176
to reports on progress of pharmacy, ix, 65; x, 49; xi, 49; xii, 56; xiii, 97; xiv, 194; xv, 123; xvi, 129; xvii, 123
Preparation of alcoholic narcotic extracts, xvii, 145
aloin, ix, 162
anhydrous sulphuric acid, ix, 106
benzine, nitrobenzine, and aniline, ix, 113
bromide and iodide of potassium, ix, 106
calamus root, ix, 97
calcium, x, 146
Calisaya bark, xii, 206
carbonate of magnesia, ix, 113
chlorine, x, 142
chloroform, xvii, 237

Preparation of cinchona, xii, 104
and dispensing of plasters, xii, 231
extracts, x, 76
hydrofluoric acid, pure, ix, 111
iodic acid, ix, 112
iodine, x, 143
lactic acid, ix, 105, 120
lard, ix, 98; xii, 208
benzoinated, xiv, 46, 224; xv, 151
mercurial ointment, ix, 100; xvii, 347
nicotine, ix, 116
ointments, xii, 87
phosphide of calcium, ix, 107
platinum, black, ix, 112
pure hydrofluoric acid, ix, 111
strong bitter almond water, x, 68
taraxacum, ix, 104
ung. hydrargyri, ix, 100, 103; xvii, 347
ung. hydrargyri nitratis, ix, 100
U. S. P., xvii, 315
and use of iodide of sodium, ix, 106
Prescriptions, xii, 287
renewal of, xvi, 57
Presentation of likeness of Charles T. Carney, xiii, 68
medical works by William Wood & Co., New York, xvi, 109
Preservation of ethereal oil, ix, 148
chloroform, xiii, 128
and collection of plants, ix, 91
of collodion cotton, xiv, 156
of crystals, xvi, 149
and dispensing of ointments and cerates, xiii, 175
and dispensing of ointments, xiv, 153
of distilled waters, xii, 75
extracts, x, 76
garlic, xii, 256
Preservation of gum and starch paste, xii, 91
infusions, xi, 61
meat, xiv, 147
ointments, xii, 87
oxgall, ix, 99
plants, ix, 94
in their nature and shape, xii, 92
syrups, xi, 62
volatile oils, xi, 212, 214
wood, xii, 91
Preservative power of coal tar products on wood, xii, 152
properties of coal tar, xiii, 132
Preserved citron contaminated with copper, ix, 128
Preserves and pickles adulterated, x, 189
President's address, Colcord's, ix, 9
Kiersted's, ix, 32; x, 18
Moore's, xi, 18; xii, 26
Gordon's, xiii, 30
Lincoln's, xiii, 45; xiv, 29
Stearn's, xiv, 39; xv, 23
Milhau's, xv, 39; xvi, 29
Parrish's, xvi, 45; xvii, 29
Sargent's, xvii, 40
Presidents requested to vote for other nominations, x, 23; xiii, 45; xiv, 38
Press, x, 89; xii, 249; xvii, 137
Reuleaux's, xi, 59
Prevention of aqueous action on lead pipes, xii, 72
concussions in distilling, xvi, 168
moulding in plasters, xv, 162
rusting of metals, xvi, 151
Price of Proceedings, ix, 15; x, 14; xii, 16; xiii, 15; xiv, 15; xv, 16; xvi, 16; xvii, 16
alcohol, xi, 176
Prickly ash bark, southern, xii, 270
Prize awarded J. M. Maisch, ix, 39
T. S. Wiegand, ix, 40

Prize queries for 1870, xiii, 83
in England, xvii, 273
France, xvii, 273
Switzerland, xvii, 274
Russia, xvii, 274
Prizes, subject of, ix, 39; xi, 35
offered for next year, x, 47
suggested by Executive Committee, xii, 21
rejected, xii, 42
Proceedings, cost of, ix, 6; x, 14; xi, 22; xii, 20; xiii, 24; xiv, 55; xv, 32; xvi, 39; xvii, 37
distribution of, xiv, 22
loss of, xiv, 26
sale of, xiii, 26
stock of, x, 14; xi, 22; xii, 20; xiii, 25; xiv, 23; xv, 29; xvi, 24
sent to societies, xiv, 22
Process for ascertaining proportion of quinia in bark, ix, 96
Processes, xiv, 144; xv, 142; xvi, 146
Procter, Wm., Jr., essay on aconite root, xi, 196
essay on atropia from American belladonna root, ix, 156
essay on emp. assafœtidæ, ix, 134
Chairman Executive Committee, report, x, 18
essay on fluid extracts, xi, 222
essay on claims of guaiac to name of balsam, ix, 167
essay on liquid-ambar styraciflua, xiii, 160
essay on pharmaceutic still, xii, 207
essay on production of atropia, ix, 156
odor of commercial tannic acid, xii, 255
remarks on dialysis, xii, 264
Procter, Wm., Jr., internal revenue law, xiii, 86, 89
removal of cincho-tannic acid, xiv, 43, 223
resin of cannabis indica, xii, 244
report on queries, ix, 59
report on internal revenue law, xiv, 119
report on International Pharmaceutical Congress, xv, 314
sassafras officinale, xiv, 44, 211
sale of poisons, ix, 67
still for pharmacists, xi, 207
sweet gum tree, xii, 222
Production of alcohol in the United States, ix, 23, 160
atropia from American grown belladonna root, ix, 156
bromine from Saginaw brines, xiv, 76, 243
carbonic acid by vegetation, xii, 173
cold, xvi, 141
conium seeds in the United States, ix, 166
intense cold, x, 66
mercury in California, xii, 150
oxygen and chlorine, xvii, 191
tartar in the Ohio valley, x, 31, 41, 226
Professional appointments and resignations, ix, 69
Professor Wilson's paper on education of clerks, ix, 76
Professors of Maryland College of Pharmacy invited to sit with us, xi, 30
University of Maryland to sit with us, xi, 30
Progress of pharmacy, report, ix, 65;

x, 49; xi, 34, 49; xii, 56; xiii, 46; xiv, 139; xv, 123; xvi, 129; xvii, 123
Pro memoriâ, xvii, 59
Propenyl alcohol, glycerin, xvii, 239
Proper time for collecting podophyllum, xvi, 86
method of appointing examiners for degrees in pharmacy, xvi, 344
Propionic acid, xi, 136; xv, 233
Proportion of cantharidin in different parts of the fly, ix, 99
whisky in beer distillation, xv, 309
Proposal for committee to confer with government about tariff on drugs, xvii, 79, 80
to permit Chairman of Committee on Drug Market to prepare statistics for publication, xvii, 79
Proposed amendments to Constitution relative to Secretary, xii, 30
adopted, xiii, 36
to Constitution relative to duties of Committee on Drug Market, xiii, 44
adopted, xii, 44
to Constitution relative to election of members ad interim, xii, 42
adopted, xii, 44
to Constitution relative to Local Secretary, xiii, 64
Proposed amendments adopted, xiv, 28
to Constitution relative to price of certificates and signature of one Vice-President, xiv, 24
adopted, xv, 74
to Constitution relative to eligibility of professors of pharmacy, materia medica, and chemistry, xv, 39
adopted, xv, 57
economy in use of alcohol, xiii, 201
Proposition to appoint committee in each State in regard to law about practice of pharmacy, xvii, 80
withdrawn, xvii, 80
to consider place of next meeting, xvii, 99
to appoint Committee on Credentials, to serve for next meeting, xiii, 83
lost, xiii, 83
to avoid loss of Proceedings, xiii, 74
collect formulas for unofficinal preparations, xvi, 71
facilitate sale of Proceedings, xiii, 74
for membership, ix, 3, 17, 30, 33, 40; x, 10; xi, 20, 31, 35, 42; xii, 18, 29; xiii, 20, 64; xiv, 18, 50; xv, 19, 52, 67, 98; xvi, 18, 93, 108
honorary membership, xvi, 107; xvii, 18, 46

Proposition to require all MSS. for publication to be handed to Permanent Secretary before close of sessions, ix, 5
Proprionic acid, x, 157
Propyl alcohol, xvii, 234
Propylamine, ix, 96; xi, 148; xiii, 134
Propylene, xvi, 273
oxide, xv, 252
Propylic alcohol, xi, 134
Prosopis spec., xvii, 184
Proteaceæ, xvi, 195
Protein, ix, 90
compounds, x, 169; xii, 166; xv, 265; xvi, 284
Protiodide of mercury, xv, 224
sulphur, xi, 116
Protocarbonate of iron, xvi, 228
Protocatechuic acid, xv, 238
Protoiodide of sulphur, xi, 116
Protosalts of iron, x, 149; xiv, 166
Protosulphate of iron, xv, 215
Protozoans, xii, 118
Prunus domestica, xii, 101
Prussian blue, soluble, xv, 227
Pharmacopœia, ix, 75
Pseudo-cumene, xvii, 231
morphia, xvi, 260
hexylurea, xvi, 264
sugars, x, 166
Ptelea trifoliata, x, 105; xi, 81; xiv, 159; xv, 175
Publications, American, xv, 127; xvi, 132
in English language, xii, 61; xiii, 98, 102; xiv, 139; xv, 128; xvi, 134
French language, xii, 64; xiii, 102, 103; xiv, 144; xv, 131; xvi, 135
Dutch language, xv, 138; xvi, 142
German language, xii, 65; xiv, 142; xv, 132; xvi, 138
Publications of American works, x, 60, 61
English works, x, 62
exhibited, xvi, 377
French works, x, 63
German works, x, 65
Publications, Italian, xv, 136; xvi, 143
Spanish, xv, 137
presented, xv, 22
received, xv, 413
Pulps of chocolate, xii, 90
Pulveres, xi, 62; xvii, 342
Pulverization, xii, 280
Pulvis aërophorus, xvii, 373
antimonialis, xii, 74
aromaticus, xvi, 163; xvii, 342
carbonis ligni from cork, xii, 73
glycyrrhizæ comp., xvii, 374
magnesiæ cum rheo, xvii, 374
stypticus, x, 68
Pulu, ix, 90
Pumpkin seed for tænia, xiii, 58, 110
Punica granatum, xv, 179
Pure benzole from coal naphtha, ix, 121
carbonate of lime, xvi, 223
copper, xii, 144
methylic alcohol, x, 160
potassa, x, 144
silicic acid, xi, 112
silver, xiv, 178
water, xvii, 192
Purification of arsenical sulphuric acid, xii, 148
bismuth, xvii, 229
by means of oxide of iron, ix, 109
of castor oil, ix, 101
honey, xv, 156
hydrochloric acid, xi, 115
hydrochloric acid from chlorine and sulphurous acid, ix, 112
paraffin, ix, 122
platinum vessels, xiv, 183
sulphuric acid from arsenic, ix, 106
water, xv, 146
zinc, xvii, 218
Purified oxgall, ix, 123
tincture of opium, xiv, 151
Purifying potable waters, xii, 133
water from organic substances, xii, 134
Purple of Cassius, xvi, 238
Purpurine, xv, 263
Pus, x, 174
Putrefaction, xii, 167
of urine, xii, 171
Putty for metals, xv, 149

Putty, waterproof, xiv, 155
Puya alpetris, xvi, 200
coarctata, xvi, 200
cœrulea, xvi, 200
spec, xvi, 200
Pyle, J. L., deceased, xiv, 20
Pyocyanin, xi, 170
Pyrethrum, x, 112
carneum, xii, 106
roseum, xii, 244
and carneum, x, 112
Willemoti, xii, 106
Pyrmont Springs, xiv, 165
Pyroacetic acid, xiv, 180
Pyrocyamin, xi, 170
Pyrodextrine, xi, 144
Pyrogallic acid, xiv, 180; xv, 238
and gallic acid, xvi, 218
Pyroglycerin, xi, 135
Pyrophosphate of iron and soda, ix, 97; xiv, 171
of soda and iron, ix, 106
Pyrophosphoric amides, xvi, 218
Pyrophosphotriamic acid, xvi, 218
Pyroxylin, xi, 144
soluble in alcohol, xii, 165
Pyrus malis, xvi, 183

Quadrantoxide of copper, xii, 144
Qualifications for membership, xii, 34
Qualitative analysis of alkaloids, xii, 180,
with HS, xvi, 146
determination of tannin, ix, 119
and quantitative analysis of starch, xvii, 246
Quality of drugs, xvi, 323
Quantitative analysis of thallium, xii, 137
determination of volatile oils in alcohol solutions, xv, 147
estimation of tartaric acid, xvii, 253
Quaternary alkaloids, x, 163
Quercetine, x, 167; xvi, 283
Quercitrin, ix, 119; x, 167; xi, 147
Quercotannic acid, xvi, 249
Quercus, xi, 84; xvii, 169
heterophylla, x, 105
infectoria, xi, 84
Queries on Abies Canadensis and its products for medicine and arts, xvi, 123
Queries on Abies continued to Wm. Procter, Jr., xvii, 50, 95
acetic acid in acet. ext. colchicum, xvii, 94
acid. citric. from tomatoes, &c., ix, 62; xii, 50
dropped, x, 36
continued to H. N. Rittenhouse, xiii, 52
relieved from subject, xiv, 56
hydriodicum, xv, 116
replied to by John A. Dunn, xvi, 78, 383
hydrochloricum, the effect of sulphuric acid in, xv, 118
replied to by Dr. E. R. Squibb, xvi, 409
hydrocyanicum dil., its spontaneous decomposition, xiv, 71
continued to Dr. Squibb, xv, 57
replied to by Dr. Squibb, xvi, 117, 419
tannic, removal from tincts., xv, 116
not replied to, and dropped, xvi, 118
valerianicum, specific gravity, xv, 118
replied to by F. C. Musgiller, xvi, 115, 397
aconitum napellus, can it be grown in the United States, &c., ix, 59
not replied to, x, 31
aconitum napellus, relative value of foreign and indigenous, x, 44
replied to by Prof. Procter, xi, 196
actinic rays of light, xiii, 79
reported on verbally and against the proposal, by Dr. Jenkins, xiv, 56
adulteration of olive oil, x, 47

Queries on adulteration of olive oil not replied to, xi, 41
advantages and disadvantages of coating pills with sugar, &c., xiii, 79
continued to S. Mason McCollin, xiv, 47
alcohol, economy in its use, xiii, 78
no reply being made, it was dropped, xiv, 43
its reactions with permanganates, xv, 117
replied to by G. F. H. Markoe, xvi, 114, 393
alcoholic strength of resinous tinctures, xii, 50
continued to Mr. P. W. Bedford, xiii, 57
alcoholic strength of resinous tinctures, xvi, 122
replied to by A. B. Taylor, xvii, 47, 381
aloes socotrina, xvii, 93
aloin, a process for it, xi, 43
referred back to committee, xii, 36
formula, xiv, 72
continued to W. Procter, Jr., xv, 58
American sulphuric and other acids contain arsenic, x, 47
replied to by Prof. J. M. Maisch, xi, 41, 255
ammoniated citrate of bismuth, xvi, 123
ammoniæ acetatis liquor, xiii, 79
valerianas, xi, 46
dropped, no reply, xii, 43
valerianatis elixir, formula for, xi, 46
Queries on ammoniæ valerianatis elixir, continued to J. Roberts, xii, 43
replied to by Prof. J. Faris Moore, xiii, 59
anacahuito wood, ix, 62
not replied to, x, 36
aniline dyes, ix, 61
not replied to, x, 36
apparatus for gas heating, xi, 46; xii, 52
pills, xiii, 79
retail pharmaceutists, ix, 62
replied to by Prof. E. Parrish, x, 37, 201
apparatus for gas heating, xi, 46
continued to P. W. Bedford, xii, 52
replied to by P. W. Bedford, xiii, 82
apparatus for temperatures of 160°, 140°, 120°, xii, 50
replied to by Prof. Bedford, xiii, 58, 155
apparatus for making pills, xiii, 79
continued to Ferris Bringhurst, xiv, 47
replied to by F. Bringhurst, xv, 108, 375
apparatus for steam heat for pharmaceutic purposes, xiii, 77
continued to Prof. Procter, xiv, 41; xv, 58
approximate methods of testing extracts and fluid extracts and tinctures, xiii, 80
E. Parrish excused from reply to this query, xiv, 56
aqua camphoræ, proportion of camphor dissolved in, xi, 44
aqueous extract of jalap, xi, 44

Queries on aqueous extract of jalap, replied to by A. B. Taylor, xii, 37, 215
arnica flowers, their active principle, &c., ix, 62
not replied to, x, 37
arrowroots and their comparative values, ix, 63
replied to by E. T. Ellis, x, 38, 212
asclepias, the milky juice of, xvi, 121
asphaltum, its sources, &c., xvi, 122
astringents containing tannin producing green precipitates, xiv, 73
not replied to, xv, 58
indigenous to U. S., their tannin value, ix, 63
not replied to, x, 34
beeswax, its commercial and chemical history, xiii, 79
continued to J. F. Babcock, xiv, 47
belladonna and hyoscyamus, the difference between the foreign and indigenous, and to what is the difference owing, xiii, 79
benzine in pharmacy, xii, 51
benzoinating lard, xiii, 79
replied to by Thomas Doliber, xiv, 46, 224
and continued by Thos. Doliber, xv, 77, 385
best method of keeping garlic, x, 46
best method of testing acid and alkaline solutions, x, 45
not replied to, xi, 39
as it was not replied to, it was dropped, xii, 48
best processes for ascertaining strength of fluid extracts and tinctures not containing alkaloids, xvi, 121
Queries on bismuth, ammoniated citrate of, xvi, 123
not replied to, xvii, 114
metallic, from what sources in this country is it obtainable and to what amount, xv, 118
continued to C. A. Tufts, xvi, 119
bisulphite of soda, xvi, 123
bitter wine of iron, xi, 45
replied to by James T. Shinn, xii, 38, 234
blue mass, commercial, the causes of its variable appearance, xv, 118
not replied to, and dropped, xvi, 118
bromide of potassium, best tests for, xv, 117
not replied to, and dropped, xvi, 118
bromide of potassium, best tests for, xvi, 123
not replied to, xvii, 114
bromine, its sources in the U. S., and the extent of its production for supply of commerce, xvi, 122
buchu leaves, x, 46
replied to by Prof. P. W. Bedford, xi, 39, 211
buchu, its active principles, xv, 116
continued to Thomas A. Lancaster, xvi, 79
noticed at, xvii, 50
camphoræ aqua, proportion of camphor in solution, xi, 49
replied to by G. F. H. Markoe, xii, 37, 212

Queries on camphor as an insecticide, xvii, 95
oil of, Formosa, xv, 116
not replied to, and dropped, xvi, 118
a substitute for, as a protection against moths, &c., xvi, 122
replied to by G. F. H. Markoe, xvii, 48, 365
water, which is the preferable process, xii, 50; xiii, 55, 153
cannabis indica, ix, 60
replied to verbally by Prof. Procter, x, 32
sativa resin, a test for, xi, 46
replied to by Prof. Procter, xii, 44, 244
cantharis in America, ix, 62
replied to by F. C. Hill, x, 38, 228
cantharidin, ix, 60
not replied to, x, 31
a permanent solvent for, x, 44
continued to J. Faris Moore, xi, 37
no answer being received, it was dropped, xii, 48
capsicum, is there a crystalline principle in it, ix, 60
Queries on capsicum, not replied to, x, 31
replied to by Prof. Parrish, x, 44; xii, 48, 262
continued to Prof. E. Parrish, xi, 37
carbolic acid, the best tests for, xv, 117
not replied to, and dropped, xvi, 118
cardamom, a substitute for, in our indigenous aromatics, xvi, 122
replied to by Jos. L. Lemberger, xvii, 97, 382
cassia marilandica, xvii, 95
castor oil beans, ix, 61
not replied to, x, 34
leaves and plant, ix, 62
trade, ix, 61
replied to verbally by Mr. Mayer, x, 34
celandine, the best forms for using, xvi, 121
cerates made with Japan wax, ix, 59
cimicifuga, essay on its chemistry and pharmacy, and its medical uses, x, 47
seeds of, the characteristic properties and chemical constituents, xii, 49
replied to by E. C. Jones, xiii, 57, 186
cinchona, its exhaustion and permanent preservation, xi, 44
cincho-tannic acid, its removal from cinchona, xiii, 78
replied to by Prof.

W. Procter, Jr., xiv, 46, 73, 223
Queries on citric acid, can tomatoes be made a source of supply for, ix, 62
can it be profitably produced from currants, gooseberries, or tomatoes, xii, 50
change in formula for emp. picis cum cantharide, xiii, 78
answered by Geo. C. Close, xiv, 43, 206
chelidonium majus, its value as a source of sanguinarina, compared with sanguinaria, ix, 61
continued to P. W. Bedford, x, 47
replied to by P. W. Bedford, xi, 41
chenopodium anthelminticum, does it contain a principle analogous to santonin, ix, 60
continued to James Balmer, x, 44; xi, 36; xii, 48
chenopodium anthelminticum, is the volatile oil its only active ingredient, xiii, 78
referred to committee, xiv, 44
continued to Thos. S. Wiegand, xiv, 74
replied to verbally by Thos. S. Wiegand, xv, 66
chicory, its culture, &c., xv, 116
verbally replied to by G. F. H. Markoe, xvi, 79
chlorinated lime, best means of preserving and dispensing it, xv, 116
not replied to, and dropped, xvi, 118
chrysophanic acid, its isolation from senna, xiii, 77
Queries on chrysophanic acid, not replied to, and continued to F. W. Sennewald, xiv, 42
answered by F. W. Sennewald, xv, 63, 371
citrate of magnesia, effervescing, xiii, 78
citric acid, can it be profitably produced from currants, gooseberries, or tomatoes, xii, 50
cloves, crystalline matter in fluid extract of, xv, 116
replied to by J. F. Llewellyn, xvi, 78, 385
cloth suitable for use with press, xiii, 77
not replied to, and referred to committee, xiv, 42
cod-liver oil trade, ix, 61
not replied to, x, 34
coffee as an antidote to organic poison, xv, 116
not replied to, and dropped, xvi, 118
as an antitoxic deodorant and disguise, xvii, 93
coating pills with sugar, its advantages and disadvantages, xiii, 79
continued to S. Mason McCollin, xiv, 47
not replied to, xv, 108
cacao butter, and effects of tallow, wax, &c., xvi, 123
not replied to, xvii, 118
colchicia, xiv, 72
replied to by C. Lewis Diehl, xv, 99, 363
colocynth, ix, 60
replied to by John Faber, x, 31, 197
commercial extract of quassia, xiii, 78
honey, xiv, 71

Queries on commerce in quackery, ix, 62
not replied to, and dropped, x, 30
competition, its effects on pharmaceutic progress, xv, 117
not replied to, and dropped, xvi, 80
conia, xiv, 70
continued to G. C. Close, xv, 56
replied to by G. C. Close, xvi, 95, 413
conium extract and fluid extract, their efficacy, xvi, 121
conium and extract. conii, xiv, 73
seeds, their advantages as a basis for tincture, ix, 60
not replied to, x, 31
seeds, their advantages as a basis for tincture, x, 44
replied to by Geo. C. Close, xi, 37, 200
convolvulus panduratus, ix, 61
continued to J. L. Lemberger, x, 34
copaiba, ix, 61
not replied to, x, 34
corks, their source and where cut, xvi, 121
replied to by Prof. P. W. Bedford, xvii, 47, 358
cotton root and seeds, their active principles, xiii, 78
reported on verbally by E. W. Sacrider, xiv, 43
seed oil, ix, 60
replied to by W. J. Watson, x, 32, 237
creasote, ix, 60
verbally reported on by Chas. Bullock, x, 37
Queries on creasote, from wood, x, 45
not replied to, xi, 37
cubeba, its diuretic principle, xiv, 70
cyanide of potassium, an antidote, xvii, 95
decoct. sarsaparillæ comp., xiv, 71
replied to by William Saunders, xv, 98, 339
decomposition of syrups, x, 50
not replied to, and dropped, xiii, 52
dialysis, x, 47
continued to Prof. Wm. Procter, xi, 41
digitalin, a formula for it, xiv, 73
continued to William Procter, Jr., xv, 58
digitalis, American, its value as a source of digitalin, xiv, 70
continued to S. P. Duffield, xv, 57
replied to by S. P. Duffield, xvi, 115, 413
distillation of tobacco for empyreumatic oil, xiii, 78
dittany, xi, 45
drugs, sources of supply and statistics of indigenous, xvi, 123
dry wine from grapes, made in United States, xiv, 71
duty of pharmaceutists in regard to factitious brandy and wine, ix, 62
continued to Henry F. Fish, x, 45, 210
referred to Edward Parrish, xi, 38, 46
replied to by Edward Parrish, xii, 47, 257
economy in alcohol, xiii, 78
not being answered, it was dropped, xiv, 43
effervescing citrate of magnesia, xiii, 78
elaterium, ix, 62
replied to by Prof. Thomas, x, 36, 198

Queries on elixir valerianate of ammonia, best formula, xi, 46
eligible method of retaining strength of cinchonas in permanent solution, xi, 44
replied to by A. B. Taylor, xii, 36, 206
emetia in deposits occurring in wine of ipecac, xiv, 73
epsom salt, an effectual method of masking its bitter taste, xv, 116
continued to I. W. Smith, xvi, 117
replied to by I. W. Smith, xvii, 97, 382
ergot, as relating to propylamine, ix, 60
can the preparations of it be improved, xiv, 72
replied to by J. W. Mill, xv, 63, 358
erigerontis oleum, xi, 45; xiii, 79
not answered, and referred to committee, xiv, 46
eupatorium perfoliatum, its proximate bitter principle, xvi, 94
European pharmacy, ix, 63
not replied to, x, 38
exercise and relaxation for pharmaceutists, xiv, 74
extract. cannabis indicæ, xi, 46
conii et extract. conii alcohol., xiv, 73
continued to E. C. Jones, xv, 58
not replied to, and dropped, xvi, 118
extracts, fluid, x, 46
replied to by Wm. Procter, Jr., xi, 40, 222
hemlock bark, xiv, 72
Queries on fermentation and cryptogamic growths, xi, 43
continued to G. J. Scattergood, xii, 36; xiii, 53
dropped, xiv, 59
ferri chloridi tinct., xiv, 72
potassæ tart., objections to officinal process, xv, 118
not replied to, xv, 58
not replied to, and dropped, xvi, 118
potassæ tart., objections to, by pharmacopœia process, xiv, 74
continued to J. F. Babcock, xv, 98
not replied to, and dropped, xvi, 118
filtering-paper and filters, xvii, 95
fluid extracts, x, 46
veratrum viride, xiv, 73
garlic, its preservation, x, 46
not replied to, xi, 39
its preservation, xi, 46
replied to by A. P. Sharp, xii, 47, 256
gas-heating apparatus, xi, 46
continued to P. W. Bedford, xii, 43
gelseminia, in what part of the plant is it found, xv, 116
replied to by C. L. Eberle, xvi, 110, 386
gelsemium sempervirens, as a remedy in nervous diseases, xvi, 122
gillenia trifoliata and stipulacea, xii, 49
continued to A. E. Ebert, xiii, 50
A. E. Ebert

excused from further consideration, xix, 56
Queries on gillenia trifoliata, xvii, 95
glassware for shop furniture and dispensing, xvi, 121
replied to by T. S. Wiegand, xvii, 47, 354
glucose in its relations to manna, xvii, 94
glycerin, is the use in fluid extracts injurious, xvii, 94
its infusion, xi, 45
replied to by W. J. M. Gordon, xii, 38, 237
for preventing apotheme, xii, 50
replied to by A. B. Taylor, xii, 42, 136
common means of purifying, xiii, 77
not answered, and dropped, xiv, 42
as a substitute for alcohol, xii, 51
replied to by W. J. M. Gordon, xii, 53, 138
glycyrrhizin, the easiest method of preparation, xvii, 94
guaiacum resin, the best mode of exhibition, xvii, 94
gumweeds, ix, 30
not replied to, x, 31
hemlock bark extract, xiv, 73
continued to W. Procter, Jr., xv, 59
honey, ix, 30
Queries on honey, not replied to, x, 30
commercial, its adulteration, how detected, xii, 50
not replied to, and dropped, xiii, 52
commercial, trade adulterations and their characteristics, xiv, 71
replied to by F. W. Cuby, xv, 61, 341
trade, its present condition, foreign and domestic, xvii, 95
hydrargyrum cum creta, xv, 116
replied to by J. P. Remington, xvi, 78, 279
hydriodic acid, xv, 114
replied to by John A. Dunn, xvi, 79, 282
hydrocyanic acid and its officinal preparations, composition, xiv, 71
continued to E. R. Squibb, M.D., xv, 57
hyoscyamia, xiii, 79
not replied to, xiv, 47
hyoscyamus and belladonna, difference between foreign and indigenous, xiv, 77
not replied to, and continued to Mr. Dohme, xiv, 42
not replied to, xv, 58, 108
improvements in syrup. lactucarii, xv, 117
replied to by Prof. P. W. Bedford, xvi, 96, 289
impurities of cheap commercial glycerin, xiii, 77
not answered, and dropped, xiv, 42
of commercial

valerianate of ammonia and valerianic acid, xiii, 77
continued to N. Gray Bartlett, xiv, 42
not replied to, xv, 108
Queries on insect powder, its mode of action, &c., xvii, 94
instruction, practical, in pharmacy, xv, 117
internal revenue law, x, 47
replied to by Prof. E. Parrish, xi, 41, 260
ipecacuanha, its adulterations, x, 46
not replied to, xi, 39
iron, bitter wine of, xi, 45
persulphate, process for, xvi, 121
verbally reported, but not completed, xvii, 46
Japan wax in cerates, ix, 59
not replied to, x, 30
kino, its liquid preparations, xiv, 73
not replied to, xv, 108
laboratory, ventilation of, xv, 118
lactuca elongata, xv, 118
replied to by Prof. Maisch, xvi, 97, 405
elongata, can a pharmaceutical preparation be made from it, xvi, 124
replied to by Professor Maisch, xvii, 50, 384
lactucarium, domestic production of, x, 46
not replied to, xi, 39
Queries on lactucarium, domestic production of, xiii, 79
continued to Alf. Mellor, xiv, 46
not replied to, xv, 58, 108
syrup, xiii, 79
continued to Prof. P. W. Bedford, xiv, 46
not replied to, xv, 58
syrup, U. S. P., improvements in, xiv, 72
not replied to, xv, 58
syrup, improvements of, xv, 118
replied to by Prof. P. W. Bedford, xvi, 96, 399
lard, benzoating it, xiii, 79
its extraction and preservation, xi, 44
replied to by H. W. Lincoln, xii, 36, 208
leaves of podophyllum peltatum, xv, 110
replied to by S. P. Duffield, xvi, 115, 411
ricinus communis, xiv, 72
lemon-juice, its preservation, xiv, 71
not replied to, xv, 58, 108

Queries on light, actinic rays of, xiii, 79
liquidambar styraciflua, xi, 44
replied to partially by Wm. Procter, Jr., xii, 37, 222
replied to finally by Prof. Procter, xiii, 53, 160
liquor ammoniæ acetatis, xiii, 79
answered by W. H. Pile, M.D., xiv, 47, 226
lycopodium clavatum, xvi, 123
replied to by Prof. Maisch, xvii, 49, 368
mannite, its relations to glucose, xvii, 94
marl, x, 47
replied to by G. J. Scattergood, xi, 41, 256
maruta cotula and leucanthemum vulgare, xi, 45
partially answered by G. F. H. Markoe, and continued to him, xii, 43, 248
dropped, xiii, 55
materia medica, indigenous, what articles of it can be properly cultivated, xii, 51
not being answered, it was dropped, xiii, 53
metrical weights and measures, the arguments for and against their introduction into use with us, xv, 117
not replied to, and dropped, xvi, 80
Mexican sarsaparilla, xv, 116
not replied to, and relieved from further consideration, xvi, 79
microscope, its practical power in detecting adulteration of drugs, xvi, 123
mill for pharmaceutic uses, xiii, 77
not replied to, and referred back to committee, xiv, 42
Queries on morphia strength of powdered commercial opium, xv, 117
replied to by Prof. P. W. Bedford, xvi, 96, 392
strength of sulphate, muriate, and acetate of morphia, xv, 117
is it volatilizable by heat, ix, 60
verbally reported on by Prof. Procter, that he had abandoned the subject, x, 30
mustard, white and black, relative values of, for sinapisms, x, 46
not replied to, xi, 40
naphtha, for use in pharmacy, xii, 51
not being answered, it was dropped, xiii, 53
new remedies, their effect upon the progress of pharmacy, and the education of pharmacists, ix, 61
replied to by E. Parrish, x, 35, 233
nicotina, is it the active principle of dried green tobacco, xi, 44
replied to by Prof. F. F. Mayer, xii, 38, 223
odor of tannic acid, xi, 46
replied to by Prof. Procter, xii, 47, 255
oil of benne, ix, 60
replied to by Jas. T. Shinn, x, 204
cod-livers, ix, 61
cotton seed, ix, 60
replied to by W. J. Watson, x, 237

Queries on oil of sassafras, ix, 62
replied to by A. P. Sharp, x, 37, 209
wells of Western Pennsylvania, ix, 60
continued to G. W. Weyman, x, 32, 45; xi, 37
camphor, Formosa, xv, 116
not replied to, and dropped, xvi, 118
erigeron, xiii, 79
not replied to, Dr. Thomas having died, xi, 45; xii, 39
oleum matico, does it possess the anti-hemorrhagic power of the herb, xi, 44
replied to, that proper material was not obtainable, xii, 37
theobromæ, xiv, 71
replied to by H. W. Lincoln, xv, 108, 347
olive oil, its adulterations, x, 47
not replied to, xi, 41
as it was not replied to, it was dropped, xii, 48
opium trade, xvii, 94
outfit of apparatus for young pharmacists, ix, 62
oxides of iron, impure, used in medicine, x, 47
replied to by Ferris Bringhurst, xi, 41, 253
patents, in their relation to pharmacy, ix, 63
peach kernels, xii, 50
not replied to, and dropped, xiii, 52
peppermint trade and its extent, with account of any improvements in regard to purity of product, xvii, 95
pepsin, its sources and best mode of preparation, xvii, 94
percolation and press, their relative advantages, xiii, 77
not replied to, and referred back to committee, xiv, 42
Queries on permanganates and their reactions with alcohol, xv, 117
replied to by G. F. H. Markoe, xvi, 114, 393
pharmaceutical business, its management, &c., xiii, 77
replied to by F. Stearns, xiv, 42, 201
pharmaceutist as a merchant, xi, 44
replied to by Fred. Stearns, xii, 37, 216
pharmaceutists obtaining necessary exercise and relaxation, xiv, 74
not replied to, xv, 58, 108
pharmacopœia, universal, is it desirable, xv, 117
not replied to, and dropped, xvi, 80
pharmacy as a profession, xv, 117
remarked upon by D. C. Robbins and others, xvi, 81, 84
compared with other professions, in its emoluments, xvi, 122
not replied to, and wished to be relieved from query, xvii, 48
phospho-molybdic acid, ix, 61
replied to by F. F. Mayer, x, 34, 229
phosphorus, and the best methods of dispensing it, ix, 61
replied to by John Faber, x, 33, 202

Queries on pills, sugar coating them, ix, 61
not answered, x, 34
plasters, the best method of spreading, &c., xi, 45
replied to by W. C. Bakes, xii, 38, 230
podophyllum peltatum, xiii, 78
not answered, and dropped, xiv, 43
podophyllum peltatum, leaves of, xiv, 72
continued to S. P. Duffield, xv, 57
poppy culture, xii, 50
not replied to, and dropped, xiii, 50
potassæ tartras, best process for, xvii, 95
practical instruction in pharmacy, xv, 117
replied to by Prof. Ed. Parrish, xvi, 115, 389
power of microscope for detecting adulteration of drugs, &c., xvi, 123
preparations of Prussian Pharmacopœia preferable to similar ones of our own, xvi, 122
replied to by F. V. Heydenreich, xvii, 369
preservation of garlic, x, 46; xi, 46
press-cloths, xiii, 77
not replied to, and referred to committee, xiv, 42
for laboratory uses, xi, 46
replied to by R. H. Stabler, xii, 44, 249
process for assaying opium, xvii, 95
determining the alkaloidal value of cinchona, xvi, 123
not replied to in consequence of illness of Dr. Duffield, xvii, 50
Queries on process, &c., persulphate of iron, xvi, 121
testing strength of tinctures and fluid extracts not containing alkaloids, xvi, 121
propylamine, ix, 60; x, 45
not replied to, x, 32
continued to Prof. R. P. Thomas, xi, 37
pyrophosphate of iron, xv, 118
replied to by S. P. Duffield, xv, 115, 413
pyrophosphate of iron becomes less soluble, why, and can it be prevented, xvi, 123
not replied to, and continued to G. E. Jeannot, xvii, 50
pumpkin seeds, a permanent preparation of, xii, 50
not replied to, and dropped, xii, 43
seeds, what is their efficacy owing to, xi, 46
continued to C. A. Tufts, xii, 43
dropped, xiii, 58
quassia extract, xiii, 79
answered by E. C. Jones, xiv, 44
quiniæ sulphis, does it exist? is it permanent and superior to other preparations of its bases, xiv, 73

Queries on quiniæ sulphis, continued to T. E Jenkins, xv, 58
reported verbally, and dropped, xvi, 118
relative values of foreign and indigenous drugs, ix, 62
not replied to, x, 38
ricinus communis, seeds of, xiv, 72
not replied to, xv, 108
communis, leaves of, xiv, 72
not reported on, Mr. Cushman having died, x, 36
continued to Mr. Heydenreich, xv, 108
verbally reported on by Mr. Heydenreich, xvi, 117
rhubarb in China, inquiry into origin, culture, and trade in, xvi, 121
progress on the subject was reported, but recommended to be dropped, xvii, 46
rhus toxicodendron, its poisonous principle, xi, 45
continued to Prof. J. M. Maisch, xii, 39
replied to by Prof. J. M. Maisch, xiii, 56, 166
salts of sanguinarina, xii, 50
not replied to, and dropped, xiii, 50
sanguinaria, x, 46
replied to by Prof. R. P. Thomas, xi, 40, 214
precipitate of, in tincture and acetum, does it contain sanguinarina, xiv, 73
not replied to, xv, 108
Queries on sarsaparilla, decoct. comp., xiv, 71
Mexican, xv, 116
sassafras, officinale, its relations to chemistry and pharmacy, xiii, 78
replied to by Prof. Procter, xiv, 44, 211
oil, supply, mode of manufacture, &c., ix, 63
replied to by A. P. Sharp, x, 38, 209
scutellaria lateriflora, xiii, 79
continued to G. F. H. Markoe, xiv, 46
not replied to, xv, 108
seeds of ricinus communis, xiv, 72
senega and spigelia, ix, 62
replied to by Mr. Dohme, x, 36
sennin, xiv, 73
not replied to, xv, 58
sesami oleum, ix, 60
soap, its influence on resin scammony, xvii, 94
soaps for pharmaceutists, ix, 62
not replied to, x, 37
socotrine aloes, is the part insoluble in water worthless, xvii, 93
soda, bisulphite, xvi, 123
not replied to by Dr. Duffield, he being ill, xvii, 50
solidago odora, its medicinal active principle, xi, 45

Queries on solidago odora, replied to by letter of Mr. C. H. Heinitsch, xii, 39
soluble pyrophosphate of iron, xvi, 123
southern prickly ash bark, ix, 61
continued to Prof. R. P. Thomas, x, 45
replied to by Prof. R. Bridges, xii, 49, 270
spatulas, stirring, agitators, &c., xi, 45
replied to by T. S. Wiegand, xii, 39, 241
spirits of pharmacopœia, ix, 62
replied to by T. S. Wiegand, x, 195
still, for pharmacists, ix, 63
referred to William Procter, Jr., x, 45
replied to by William Procter, Jr., xi, 38, 207
stramonium, is its alkaloid, daturia, identical with atropia, &c., xi, 44
not replied to, xii, 37
continued to F. F. Mayer, xiii, 53
strychnaceæ, x, 46
replied to by Prof. F. F. Mayer, xi, 40, 248
substitution of alcohol and ether in preparation of oleo-resins, xiii, 78
replied to by H. N. Rittenhouse, xiv, 57, 208
sugar-coated pills, ix, 61
not replied to, x, 34
coated pills of commerce, are they as soluble as those of like age uncoated, xvi, 121
sulphite of quinia, &c., xiv, 73
replied to verbally, and dropped, xiv, 75; xvi, 118
supply and statistics of indigenous drugs, xvi, 123
continued to C. L. Diehl, xvii, 50
Queries on suppositories, their rapid preparation, xv, 118
replied to by C. L. Eberle, xvi, 111, 401
syrup of lactucarium, xiii, 79
of lactucarium, improvements in, xiv, 72
of senega, xiv, 71
replied to by C. Lewis Diehl, xv, 98, 342
tannic acid, its removal from tonic tinctures, xv, 116
tannin value of indigenous astringents, ix, 61
not replied to, x, 34
referred to James T. Shinn, x, 45
dropped, xi, 38
tapioca, xvi, 123
tartaric acid and its chemical relations, ix, 62
reported verbally on by Prof. Maisch, x, 36
continued to Prof. J. M. Maisch, x, 45
replied to by Prof. J. M. Maisch, xi, 204
tartar and tartaric acid, its production in Ohio valley, ix, 60
replied to by W. J. M. Gordon, x, 226
probable progress in collection of, in 1862, 1863, x, 45
replied to by W. J. M. Gordon, xi, 38
tartrate of potassa, process for, xvii, 95
tar, substitutes for Carolina, xiv, 72
not replied to, and dropped, xv, 63
tests for purity of bromide of potassium, xv, 117
dropped, xvi, 118
accepted by J. F. Llewellyn, xvi, 123

Queries on theobromæ oleum, xiv, 71
replied to by Henry W. Lincoln, xv, 347
therapeutic value of indigenous and foreign drugs, an inquiry into, ix, 63
tinctura ferri chloridi, xiv, 72
tobacco, its distillation for empyreumatic oil, xiii, 78
not answered, and referred to committee, xiv, 44
tomatoes as a source of citric acid, ix, 62
not replied to, x, 36
turpentine, history of trade and production, xiv, 71
not replied to, xv, 58, 108
valerian, cultivated, xii, 51
continued to Thomas Doliber, xiii, 52
replied to by Thomas Doliber, xiv, 57
valerianic acid, xv, 118
replied to by F. C. Musgiller, xvi, 115, 396
values of black and white mustard for sinapisms, x, 46
ventilation of laboratory and shop, xv, 118
not replied to, and dropped, xvi, 118
veratria in veratrum viride, xiv, 72
replied to by C. Bullock, xv, 62, 360
veratrum album, xvii, 95
viride, ix, 61
replied to by G. J. Scattergood, x, 33, 223
viride, fluid extract of, xiv, 73
replied to by C. Bullock's paper, xv, 360
vessels best suited for dispensing ointments and cerates, xi, 45
Queries on vessels, &c., continued to W. S. Thompson, xii, 42
replied to by W. S. Thompson, xiii, 53, 175
vinegar, its sources, &c., xvi, 122
replied to by P. R. Hoagland, xvii, 119, 366
volatile oil of chenopodium anthelminticum, xiii, 78
continued to T. S. Wiegand, xiv, 74
reported on verbally, xv, 66
oils, their deterioration, xiv, 91
not replied to, xv, 58
oils, their protection, x, 46
replied to by Mr. A. B. Taylor, xi, 39, 212
wax, yellow, in ointments, xiv, 71
continued to Ferris Bringhurst, xv, 57
replied to by Ferris Bringhurst, xvi, 116, 416
wild cherry bark infusion, xvii, 94
wine of ipecac, deposit in, xiv, 73
not replied to, xv, 58, 108
relinquished by Mr. Markoe, xvi, 118
iron, bitter, xi, 45
dry, made in United States, xiv, 71
replied to by F. Stearns, xv, 58
wood creasote, x, 45
weights and measures, metrical, xv, 117

Queries on metrical weights and measures, the advantages and disadvantages of their general adoption, xvii, 94
Questions before Pharmaceutical Congress at Paris, xv, 316
debated at Paris Congress, xv, 52
Quicksilver in North Carolina, xv, 80, 401
Quillaya bark, xvi, 183
molina, xi, 82
Quilmai, xvi, 192
Quinia, x, 163, 186; xi, 106, 150; xii, 160; xv, 244; xvi, 260
and oil of anise, xii, 161
bases, xi, 107
camphorate of, xiii, 133
carbolate, xvi, 205
chlorate of, xv, 244
compounds, xvi, 261
de cuenca, xiv, 161
in citrate of iron and quinia, xiii, 132
decomposition by hydrogen, xv, 244
distinguished from cinchonia, xii, 161
in scarlet fever, xiii, 138
et ferri ammonio-citras, x, 137
external use of, xii, 129
ferri et magnesiæ sulphas, x, 137
iodosulphas, x, 136
manufacture of, xiv, 182
sulphas, x, 136; xi, 182; xii, 129
sulphite, xiv, 75
tannas, xii, 129
tests for purity, xvi, 260
urate of, x, 164
Quinic ether, ix, 121
Quinidiæ sulphas, xii, 129
Quinidine, xvii, 259
Quinine, arseniate, xvii, 259
excipient for, xvii, 258
fluorescence, xvii, 258
solubility, xvii, 258
valerianate, xvii, 259
vehicle for, xvii, 395
Quinoidine, xv, 244; xvii, 260
Quinoline, xii, 160

Rabourdin's method of assay of cinchona, x, 109
Rad. blodgetti, xvi, 108
Rad. irawancusæ, ix, 92
valerianæ, xi, 185
Radicals, aromatic, xi, 130
Ramie, xvii, 190
Rancidity of fats, preventive for, xiii, 108
Ranunculaceæ, x, 90; xi, 71; xiv, 157; xv, 172
Ranunculus acris, xii, 95
ficaria, x, 91
sceleratus, x, 91
acrid principle of, ix, 124
Rape oil as an adulterant, x, 190
Reaction between copper and protein compounds, ix, 111
Reactions between the hydrogen compounds of antimony and arsenic, xvii, 226
iodine and sulphydric acid, xvii, 200
of biniodide of mercury, ix, 107
calcium oxide, x, 146
chromic acid, x, 165
corrosive sublimate, x, 154
molybdic acid, ix, 110
ol. sesami with sulphuric and nitric acids, xvii, 149
terchloride of gold, x, 155
tincture of guaiacum, ix, 119
Reading of queries and replies thereto, ix, 23; x, 30, 38; xi, 36; xii, 35, 40; xiii, 50–53; xiv, 41–49; xv, 58–66; xvi, 77–80; xvii, 46–50
Ready mode of making oxygen, xii, 130
Reasons for selecting Saratoga, xvii, 88, 89
Reception of bulletin of the Royal Academy of Belgium, xiii, 46
note from Chemist and Druggist, London, xi, 35
pharmacognosy of vegetable kingdom, xv, 22
Proceedings of British Pharmaceutical Conference, xv, 22
Reconsideration of resolutions about delinquents, xii, 46

Recovery of bismuth from type metal, xii, 149
small amounts of volatile oils, xii, 79
sulphur from alkali waste, xvii, 201
Red-glass bottles, x, 66
Red oxide of mercury ointment, ix, 104; xiv, 153
phosphorus, xiv, 171
precipitate ointment, ix, 104; xiv, 153
Reduction of gold, xvi, 238
indigo blue, xvii, 267
metallic silver, ix, 112
oxides by hydrogen, xvii, 143
peroxide of iron, ix, 111
silver and mercurial salts, ix, 113
Red wine, xv, 198
Refining camphor, xvi, 195
Reform in weights and measures, ix, 104
Refractory glass vessels, xvi, 144
Reinsch's test for arsenic, ix, 129
Relations between amyloid and albumenoid matters, ix, 114
Relative delicacy of different modes of testing for arsenic, xvii, 229
value of American and foreign aconite, xi, 196–199
rhizome and radical fibres of podophyllum peltatum, xv, 379
Remarks on aniline indelible ink, xvii, 119
alkaloids of hydrastis Canadensis and xanthorrhiza apiifolia, x, 241
aqua cinnamomi, xiii, 67
Bartlett's vacuum apparatus, xiii, 74
benne oil, x, 31
benzoinated lard, xiv, 46, 47
benzoinating lard, xv, 77–79
cabinet of materia medica and pharmaceutic appliances, xv, 76
Remarks on carbolic acid, xvi, 94
chemical processes, xiv, 78, 248, 252
chicory, xvi, 80
code of ethics, xvi, 91, 92
conium, xvi, 86
crystallized carbolic acid, xvi, 119
deodorizing alcohols, xvi, 114
dialysis, xii, 264
Mr. Dunn's paper on hydriodic acid, xvi, 79
East River Medical Association's paper, xvi, 57–70
employers and clerks, ix, 16
filters, xv, 109, 112
fluid extracts, as prepared by formula submitted to Association in 1869, xi, 246–248
Campbell's process for fluid extracts, xvii, 390
Graham's paper on opium, xiv, 76
of Dr. Hoffman's about Ehrenberg's services in microscopy, xvi, 105
on hydrated sesquioxide of iron, xv, 92
lactuca elongata, xvi, 97
lards and ointments, xiii, 54, 55
laws pertaining to pharmacy, xv, 106, 107
liquor ammoniæ acetatis, xiv, 47, 48, 49
local associations, xiv, 40
of N. Mercer and Dr. Edwards, xvi, 28
of President Milhau on formation of colleges of pharmacy in the newer States, xv, 91
on microscopes, xvi, 88
obituary notices of deceased members, xvi, 54
paper in reply to query about shop glassware, xvi, 47

Remarks on pharmaceutic education, xiv, 39, 40
paucity of drug specimens, xvi, 372
plainness of the certificate, xvi, 104
of President Kiersted, ix, 32, 33
Procter, on taking the chair, x, 23, 24
Stearns, on taking the chair, xiv, 39
Milhau, on taking the chair, xv, 39
Parrish, on taking the chair, xvi, 45
Sargent, on taking the chair, xvii, 40
on publishing the phonographic report more fully, xv, 120
publishing statistics as proposed, xvii, 79
reliability of test of molybdic acid, iod. hydr. potas., xvii, 96, 97
report of Committee on Internal Revenue, xiv, 51, 52
report of Committee on Pharmacopœia, xvii, 28
report of Committee on Drug Market, xvi, 47–52
of Mr. Taylor on revision and publication of new Pharmacopœia, x, 42
on saffron and safflower, xiii, 67
specimens of indigenous drugs, xvi, 459
Stearn's resolutions, xvii, 104, 109
Storer & Whelpley's mill, xv, 115
sulphite of quinia, xiv, 75
Remarks on suppositories, xvi, 111
testing sweet spirits of nitre, xv, 83
therapeutic action of cubebs, xv, 94
of Mr. Tuft's, Treasurer, xvii, 115
on yellow wax, xvi, 117
instead of white wax in ointments, xv, 80
wines, by Mr. Lambert, xiv, 62
Mr. Tinkham, xiv, 63, 65
Remedies for chilblains, xii, 91
toothache, x, 86
Remington, Joseph P., on hydrarg. cum cretâ, xvi, 379
Removal of cinchotannic acid from preparations of cinchona, xiv, 223
dead skin, x, 67
odors from alcohol by permanganates, xvi, 393
Rendering bitter substances tasteless, xii, 93
castor oil tasteless, xii, 91
Rennet wine, xi, 64
Repercolation, xv, 391; xvi, 149
Replies to queries, xii, 35
Reply on benne oil read, x, 30
best process for making hydriodic acid, xvi, 78
commercial asphaltum, xvii, 48
conia and its salts, xvi, 95
of Henry Deane, Esq., to gratulatory resolution to British Pharmaceutical Conference, xii, 184
on deposit in vinum ipecacuanhæ, xvi, 117
queries on pyrophosphate of iron, digitalin, and leaves of podophyllum, xvi, 115, 403, 413, 417
gelseminia, xvi, 110, 386
hydrocyanic acid, xv, 117
lycopodium in U. S. pharmaceutical preparations from lactuca Canadensis, xvii, 50
masking the taste of Epsom salts, xvii, 97

Reply on medicinal spirits read, x, 30
commercial hydrargyrum cum cretâ, xvi, 77
ricinus communis, xvi, 117
oil of sassafras, x, 42
proper strength of alcoholic menstrua for resinous tinctures, xvii, 47
relative values of N. E. and European grown valerian, xiv, 57
substitute for camphor as protection from moth and other insects, xvii, 48
substitution of alcohol and ether by other liquids in the preparation of oleo-resins, xiv, 57
indigenous aromatics for cardamoms, xvii, 97
suppositories, xvi, 111, 400
to Query No. 6, on testing commercial and fluid extract of conium, xvii, 96
35, on use of yellow wax in ointments, xvi, 116
24, on valerianic acid, xvi, 115, 396
varieties of arrowroot, ix, 33
Report of Auditing Committee, ix, 43; x, 27; xi, 36; xii, 35; xiii, 49; xiv, 67; xv, 57; xvi, 46; xvii, 44
Business Committee, xvii, 21, 25
committees, ix, 2; x, 17; xi, 49; xii, 56; xiii, 22, 97; xiv, 81; xv, 123; xvi, 129; xvii, 123
Committee on Arrearages, xiii, 49, 80
Drug Market, xi, 34, 175; xii, 33, 187; xiii, 48; xv, 40; xvi, 46
Report of Committee to consider address of President; xvii, 76
on Credentials, ix, 1; x, 9; xi, 19; xii, 17; xiii, 17; xiv, 17; xv, 18; xvi, 17; xvii, 17
on Election of Members, xii, 33, 34
to examine proposed alteration in Constitution and By-laws, xvii, 45
Executive Committee, xi, 2, 4, 7; x, 13, 24; xi, 22; xii, 19, 25; xiii, 22, 23; xiv, 19, 20; xv, 21, 27; xvi, 20, 21; xvii, 21
Finance Committee, xv, 67
Committee on Home Adulteration, ix, 2, 8, 130
on Index, x, 35
on Internal Revenue Law, xiv, 20, 50, 88; xv, 21, 308, 314
by Dr. Squibb, xiv, 89–93
by Mr. Colcord, xiv, 114
by Mr. Procter, xiv, 120
by Mr. Moore, xiv, 122
by Mr. Massot, xiv, 124

Report of Committee on Law to Regulate Practice of Pharmacy, xvi, 20, 98, 99, 329; xvii, 21, 26
on New Certificate, xiii, 22, 41
on Nominations, ix, 18; x, 22; xi, 31; xii, 29, 30, 35; xiii, 43; xiv, 37; xv, 33, 34; xvi, 40, 41, xvii, 38, 39
Committee, &c., delegates to International Pharmaceutical Congress at Paris, xv, 21, 51, 314, 318
delegates to International Pharmaceutical Congress at Vienna, xvii, 349, 351
on metallic oxides, xi, 61
of Permanent Secretary, xiv, 21, 24; xv, 29; xvi, 20, 22; xvii, 22
on Pharmacopœia, xiv, 20, 81; xvi, 20, 26, 129; xvii, 21, 27, 42, 298
progress of pharmacy, x, 16, 49; xi, 27, 34, 49; xii, 33, 56; xiii, 22, 46, 97; xiv, 39, 139; xv, 21, 40, 123; xvi, 20, 25, 129; xvii, 21, 41, 123
of Committee on Queries, ix, 6; x, 44–47; xi, 27; xii, 49, 52; xiii, 77; xiv, 19, 70, 75; xv, 21, 57, 116, 120; xvi, 7, 9, 20, 85, 121, 124; xvii, 21, 93, 96
Report of Committee on Reference, xii, 54
Reply to East River Medical Association's communication, xvi, 96
Sale of Poisons, ix, 48, 49, 58; xi, 26
Specimens, ix, 45; x, 43; xi, 42; xiii, 94–96; xiv, 67; xv, 318; xvi, 371; xvii, 21, 284
Treasurer, ix, 20, 21; x, 24, 25; xi, 33; xii, 31; xiii, 38, 39; xiv, 53, 55; xv, 30, 33; xvi, 58, 40; xvii, 37
W. H. Whitmore on coal oils, ix, 34
Reporter's note on progress of pharmacy, xvii, 281, 283
Reptilia, xi, 100
Request for description of Chapin's herb-cutter, xiii, 76
that Mr. Bedford finish his paper on gas heating, xiii, 81
manuscript be presented on foolscap paper, xiii, 74
Researches on colocynth, ix, 118
Resin, xv, 198, 256; xvi, 200, 276
Resina jalapæ, xiii, 113; xiv, 154; xvii, 342
pini, xi, 104
podophylli, x, 78; xvi, 173; xvii, 342
scammonii, xvii, 342
Resin, distilled, x, 162
Resinoid matter of colocynth, x, 197
Resolution for President and Permanent Secretary to accredit any suitable delegates to International Pharmaceutical Congress to be held in Paris, 1867, xiv, 70

Resolution acknowledging invitations to several institutions, xvi, 85
of adjournment, ix, 64; x, 48; xi, 48; xii, 53, xiii, 96; xiv, 80; xv, 121; xvi, 124; xvii, 119
to amend Constitution by making a Permanent Secretary, xiii, 34
for annual dues to be $3, xv, 73
to appoint Internal Revenue Committee, xiv, 70
Committee on Scientific Queries and Drug Market, xi, 36
assess $1 on each member, xiii, 83
authorizing Executive Committee to fix price of Proceedings, xiii, 83
the Committee on Specimens to report in 1 month, xv, 121
Mr. Brewer about social entertainments, xv, 76
about certificate of membership, ix, 31
to have certificates on paper and parchment, xiii, 42
about the Conference of Druggists and Chemists of Great Britain, xi, 48
superseding the code of ethics by Article I, Constitution, xvi, 104
about the custody of the property of the Association, xiii, 84
Resolution declaring it expedient to appoint a committee to draft a law regulating pharmacy, xvi, 101
directing draft of law to be sent to the Governors and Speakers of Legislatures of the different States, xvii, 86
about draft of law regulating the practice of pharmacy, xvii, 83
to drop life membership, xv, 68
to employ phonographic reporter, xiv, 18
about entertainments, xv, 76; xvii, 112
exchanges, periodicals, &c., ix, 58; x, 48
to exchange with academies of Belgium and Munich, xiii, 46
giving Committee on Specimens time to complete report for publication, xvi, 121
about incorrect names and addresses, xiv, 66
for Index of Proceedings, ix, 30
about Index, x, 40
to insert such essays as may be completed in season in the Proceedings, x, 32
to insure property of the Association, and present bills therefor to Treasurer, xii, 41
about places of meeting, ix, 64; x, 43; xi, 36; xii, 40; xiii, 75; xiv, 68; xv, 105; xvi, 110; xvii, 100
respecting membership and suspended list, x, 41
about members prevented by war from sharing the benefits of the Association, xiv, 66
directing that members

in arrears who offer to resign be expelled, and their names published, xii, 41
Resolution about members dropped from the roll, xvi, 53
of visiting members, to Mr. Bedford, xv, 122
about practice of pharmacy being regulated by legal enactments, xv, 105
to prepare rules of order, xvi, 109
about late President's address reported, xvii, 76
about printed reports, ix, 44
prizes, xiii, 83
proposed, xvi, 368
to publish Proceedings of meeting of 1851, and reprint those of 1852 and 1855, xiii, 48
raising fees, xv, 56
referring to the proposition of Chairman of Committee on Progress of Pharmacy, xvii, 87
recommending every incorporated college of pharmacy to send delegates to next decennial convention, xvii, 78
recommending reduction of tariff on drugs, xvi, 75
proposed, to regulate the practice of pharmacy in State of New York, xvi, 341
to reply to Dr. Björklund, xiii, 47
referring report on arrearages to committee to arrange some way to quickly dispose of the whole subject, xiii, 50
respecting report of Committee on Drug Market, xvi, 75
respecting report on progress of pharmacy, ix, 21; x, 39, 40; xi, 34; xii, 33; xiii, 46; xiv, 41; xv, 40; xvi, 25; xvii, 41
Resolution for salary of Permanent Secretary to be same as last year, xiv, 68
fixing salaries of Permanent Secretary and Treasurer, xvii, 77
relative to societies, libraries, &c., to whom Proceedings are sent, xiv, 67
about Mr. Stearns's violation of ethics, xvii, 98
about Mr. Stearns called up, xvii, 100
Mr. Stearns, of censure and expulsion, xvii, 112
substitute parts for absolute weights and measures, and that parts mean parts by weight, ix, 64
of thanks to entertaining members of the trade, ix, 58; x, 48; xi, 48; xii, 53; xiii, 81; xiv, 80; xv, 120; xvi, 120; xvii, 114
to H. F. Fish, xiv, 56
to corps of reporters, xiii, 96; xiv, 80; xv, 121; xvi, 121
to Internal Revenue Commission, xiv, 139
to Committee on Internal Revenue Law for their labors and

report, xiv, 51
Resolution of thanks for invitation, xiv, 29
to Mr. J. M. Maisch, Chairman of Committee on Progress of Pharmacy, x, 26
to Mr. Neynaber, xiv, 60
to officers, ix, 65; xi, 48; xii, 53; xiii, 46; xvi, 120
to Philadelphia College of Pharmacy and Philadelphia pharmacists, x, 48; xvi, 120
to Reception Committee and Local Secretary of Chicago, xvii, 114
to Rush Medical College, xvii, 45
to Schaefer & Koradi, ix, 22
to J. H. Slade, xv, 121; xvi, 120
about tariff on drugs, x, 41
for Treasurer to forward blanks to life members, xv, 75
appointing committee to urge large attendance at St. Louis, ix, 40
relative to U. S. Pharmacopœia, xi, 43
Resolution of welcome to Montreal Chemists' Association, xvi, 27
Resorcin, xvi, 282
Respiration of fruits, xii, 173
Respirators, ix, 99
Résumé of drugs and druggists' articles imported into the United States for the year ending June, 1867, xvi, 316
Retiring address of President Colcord, ix, 9
President Kiersted, x, 22
President Procter, xi, 26
President Moore, xii, 26
President Gordon, xiii, 30
President Lincoln, xiv, 29
President Stearns, xv, 23
President Milhau, xvi, 29
President Parrish, xvii, 29
Retorts, xv, 139
Reuleaux's press, xi, 59
Revision of French Codex, xi, 51
Rhagonycha melanura, xi, 98
Rhamnaceæ, x, 99; xv, 176; xvii, 182
Rhamnus catharticus, x, 99; xv, 176; xvii, 182
Rheic acid, xvi, 251
Rhei pulv. adulteration, xvi, 250
Rheotannic acid, xvi, 250
Rheum, xv, 186; xvii, 170
Rheum palmatum, xiv, 163
Rhigolene, xvi, 273
Rhizoconine, xvi, 185
Rhizoma of helleborus niger, x, 91
Rhœadina, xv, 242
Rhubarb, xi, 183
root, xv, 271, 277
wine, xiv, 151
alcohol from, xv, 61
Rhus acuminata, xv, 174
succedanea, xii, 98; xvi, 179
toxicodendron, xii, 98; xiv, 159; xvi, 179
Rhizoconyline, xvi, 185
Ribes nigrum, x, 95
Richmond College of Pharmacy, ix, 67
Ricinine, xiii, 134

Ricinus communis, x, 100; xii, 111; xiv, 163; xv, 187
inermis vel manchuriensis, x, 100
Ridgewood disinfectant powder, xii, 91
Rieckher's comments on the processes of the morphiometry of opium, xvii, 170
Rittenhouse Henry N., on substitution of alcohol and ether, xiv, 57, 208
Robbins D. C., report on drug market, xvi, 46, 287
Roll of members, ix, 251; x, 257; xi, 283; xii, 327; xiii, 233; xiv, 289; xv, 421; xvi, 480; xvii, 446
present, ix, 3, 18; x, 10, 11; xi, 20; xii, 19–28; xiii, 21; xiv, 19; xv, 20; xvi, 19; xvii, 19
Rosæ, x, 102; xvii, 181
Rosaceæ, x, 102; xi, 82; xii, 101; xv, 178; xvi, 183; xvii, 181
Rosa damascena, xv, 178
Gallica, xii, 101
Rosmarinus officinalis, xvi, 190
Robbins, D. C., letter about Exhibition, xvii, 410
Roberts, David, decease of, xi, 25
Robinia pseudo-acacia, xi, 82
Robinin, xi, 147
Robiquet, E., death of, ix, 70
Roccella tinctoria, xii, 115; xvii, 165
Rochleder's, proximate analysis, ix, 78
Rollman, F., obituary on, xiii, 28
Roots and herbs, xv, 284
Austrian rhubarb, xvi, 327
bark of cinchona calisaya, xii, 102
ginger, xvi, 326
of hibiscus esculentus, ix, 88
ipecacuanha, xvi, 326
jalap, xvi, 327
of periandra dulcis, xvii, 185
China rhubarb, xvi, 327
valerian, xi, 185
Rotten stone, ix, 112
Rottlera Schimperi, xii, 111
tinctoria, x, 100; xi, 79; xiv, 163
Rubiaceæ, x, 109; xi, 87; xii, 102; xiii, 113; xiv, 160; xv, 180; xvi, 186; xvii, 172
Rubia munjisti, xiii, 113
tinctoria, x, 111
Rubidina, xi, 149
Rubidium, xii, 121; xiv, 175
and cæsium, x, 144
Rules for making fluid extracts, ix, 216
Rumania, new medical codex legalized, xvii, 271
Rumex aquaticus, xi, 86
hydrolapathum, xi, 86
maritimus, xi, 86
obtusifolius, xi, 86
palustris, xi, 86
patientia, xi, 86
Russian isinglass, xv, 285
Pharmacopœia, xv, 123
pharmacy based on German rules, xvii, 271
Russell's, G. B., invitation to Detroit and Lake Superior Iron Works, xiv, 28
Rutaceæ, x, 102; xi, 81; xiv, 159; xv, 175
Ruthenium, xv, 193, 226

Saccharated ferric oxides, xvii, 222
granulated effervescing citrate of magnesia, xvi, 164
lime, ix, 91
solution of lime, ix, 95
Saccharine fluid extracts of first class, xi, 237
fluid extracts of second class, xi, 237
Saccharoids, x, 166
Saccharum officinarum, xvi, 202
Sacred bark, xiii, 112
Saffron, ix, 29; xiii, 115; xiv, 159; xvi, 328
Safety-lamp, Warren, x, 88
Sagapenum resin, xv, 257
Salary of Permanent Secretary fixed, xiii, 36
Treasurer fixed, xv, 90
Sale of poisons, committee on, ix, 64
ix, 14, 124
Salep, ix, 90; x, 119
Salicin in urine, xii, 172
Salicylic acid, xi, 141
Saline solutions, xvii, 139
substances, as preventives of inflammability, ix, 108
Saliva, xii, 169
Salivary calculi, x, 174

Salonik opium, xvi, 175
Saltpetre in hyoscyamus, ix, 96
Salts, xvii, 156
absorbed by the skin, xii, 172
of ammonia, xi, 120
lauric acid, xii, 153
morphia, xiii, 134
sesquioxide of chromium, xii, 147
Salvia hispanica, xv, 183
officinalis, xvi, 190
Sambucus, x, 111
ebulus, x, 111
Samples of Canadian pharmaceutical preparations, xi, 35
Sample of opium made in Virginia, xiii, 51
San Francisco Pharmaceutical Association, ix, 67
Sander, Enno, report on progress of pharmacy, xiv, 139
Sands, Jesse M , deceased, xv, 28
Sanguisuga, xiv, 165
medicinalis, x, 126
Sanguinaria Canadensis, ix, 95; xi, 75; xii, 96; xv, 173
Santalaceæ, xiv, 163; xvi, 196
Santonate of lithia, xvi, 280
protoxide of mercury, ix, 91
Santonin, x, 138, 167; xii, 130; xv, 261; xvi, 155
adulterated, ix, 128
lozenges, xii, 85
syrup, x, 79
tablets, xv, 161
Santoninum, x, 138
Saoria, xii, 90
Saoria picta, xii, 107
Sapindaceæ, x, 97; xi, 77; xii, 99; xiv, 159; xvi, 181
Sapo jalapinus, xvii, 374
Saponin, xi, 146; xvi, 280
Sapotaceæ, x, 108; xii, 107; xiii, 112; xvi, 189
Sarcolactic acid, x, 173
Sarcosina, xi, 170
Sarraceniaceæ, x, 92; xi, 73; xii, 96
Sarracenia purpurea, x, 92; xii, 96
Sarsaparilla, x, 120; xi, 184
extract, x, 78
therapeutic properties of, ix, 89
Sassafras bark in Baltimore, xii, 201
officinalis, xv, 186
Saunders, W., on compound decoct. sarsaparilla, xv, 98, 339
Saunders, W., on oil of stillingia, xvi, 460
podophyllum peltatum, xv, 81, 379
Savanilla rhatany, xiii, 111
Saxifragaceæ, xii, 101
Scammonium, x, 167; xi, 184
Scammony, collection of, in Asia Minor, ix, 89
examination of, ix, 117
Scattergood, G. J., on fermentation, xii, 36
potassa from marl, xi, 256
veratrum viride, x, 222
report on progress of pharmacy, xii, 56, 182
Schedule A, accompanying law, xvii, 57
B, " xvii, 58
C, " " 58
D, " " 58
E, " " 58
F, " " 59
G, " " 59
H, " " 59
of classification, xii, 69
Schinus mollis, xi, 84; xv, 174
Schneider's process of the morphiometry of opium, xvii, 179
Schoenn's method of detecting sulphur in organic compounds, xvii, 202
test for phosphorus in organic substances, xvii, 207
Science, curiosities of, ix, 78
Scientific institutions in England, x, 54
Germany, x, 56
Switzerland, x, 56
the United States, x, 54
queries, ix, 6; x, 44, 47; xi, 27; xii, 49, 52; xiii, 77; xiv, 19, 70; xv, 21, 57, 116, 120; xvi, 7, 9, 20, 85, 121, 124; xvii, 21, 93, 96
Scilla maritima, x, 119; xiv, 163
Scitamineæ, xvii, 167

Scoparine, xv, 262
Scope of the drug business, xvi, 287
Scopolia mutica, x, 115
Scorodosma fœtidum, xi, 75
Scorpio gabonensis, xi, 100
Scorzonera hispanica, x, 120; xi, 90
Scrophulariaceæ, x, 114; xi, 90; xii, 107; xiii, 114; xiv, 162; xv, 183; xvi, 189
Scrophularia nodosa, xi, 91
Scrophularineæ, xvii, 172
Scully, Harmar D., deceased, xv, 28
Sea-sickness, remedy for, xii, 92
Seat of vesicating principle of lytta vittata, ix, 99
Secale cereale, xvi, 201
cornuti tinct., x, 74
Secondary aromatic alcohols, xvii, 234
Secretary directed to return thanks for invitation to Harper Hospital, xiv, 44
Corresponding, report of, x, 33, 191; xi, 172
Secretions and structures, x, 170
Secret medicines, xvii, 164, 279
nostrums, xvi, 467
Sedative pills, x, 82
Seeds of cimicifuga racemosa, xiii, 186
croton tinctorium, xvii, 189
hura crepitans, a powerful cathartic, xvii, 189
skinning of, xi, 61
Selenides of tin, xv, 220
Seleno-cyanogen, xv, 229
Selenium, x, 141; xiv, 170; xv, 203
Selinum palustre, ix, 93
Seltzer waters for fountains, xi, 70
Semecarpus anacardium, xi, 84
Senega, xi, 184; xii, 202
extract fluid, x, 78
Senna, xi, 184; xv, 177; xvi, 182; xvii, 183
Sennewald, F. W., chrysophanic acid in senna, xv, 371
Sennin, xvi, 280
Separation of alkaloids in forensic analysis, xvii, 265
cobalt from nickel, xiv, 187
magnesia from the alkalies, xiv, 185
from lime, xiv, 186
from potassa and soda, xiv, 185
Separation of manganese from nickel and cobalt, xiv, 187
Sericographis mohitli, xiv, 162
Serpentaria, xi, 185
Sesamum indicum, x, 114, 183
Sesquichloride of iron, xii, 90
Sesquioxide of chromium, xvi, 228
Sesquisalts of iron, x, 183
behavior to sulphurous and hyposulphurous acids, ix, 107
Seven sisters of sleep, ix, 79
Sewing silk dosed with lead, x, 191
Sharp, A. P., on oil of sassafras, x, 209
preservation of garlic, xii, 256
Shellac, xiv, 193
examination of, x, 190
Sherry wine and its assay, xii, 296; xv, 198
Shinn, James T., on oil of benne, x, 204
bitter wine of iron, xii, 234
Silenic acid, xv, 203
Silica, xi, 154
Silicates, xv, 207
Silicate of soda soap, xii, 90
Silicium, xi, 112; xii, 135; xv, 206; xvi, 219
alloy of, xii, 135
compounds with oxygen and hydrogen, xii, 135
Silicon, x, 141; xi, 112
Silver, x, 154, 184; xi, 127; xii, 150; xiv, 178; xv, 225; xvi, 237; xvii, 214
amalgam, ix, 110
chloride of, xi, 127; xii, 150
nitrate of, x, 154; xi, 127
oxide, xii, 150, 151
Silvering cast iron, xvii, 163
glass, xvii, 162
surfaces, xi, 61
Silybum marianum, xi, 89
Simarubaceæ, x, 101
Simms, G. G. C., on protoxalate of iron in medicine, xv, 82, 407
Simple apparatus for illustrating the manufacture of sulphuric acid, xvi, 143
Simple apparatus for phosphorus testings, xvii, 208
dialyser, xv, 141
Sinapic collodion, x, 71

Sinapis nigra, xi, 77; xvi, 177
Siphonia elastica, xvii, 169
Sizing for woollens, xv, 150
Sketch, biographical, of Henry Cavendish, ix, 225
of progress of pharmacy and collateral branches, xvii, 126
Skinning of seeds, xi, 61
Smell of musk, antidote to, ix, 101
Smilaceæ, x, 120
Smilax aspera, ix, 92
Smith, E. R., deceased, xvii, 22
G. W., deceased, ix, 71
Isaac W., masking taste of Epsom salts, xvii, 382
Smyrna opium, xvi, 175
Snake-bites, remedies for, xi, 100
Snuff, adulterated, x, 189
Soap bark, ix, 95
castile, xi, 183
plaster, xvi, 162
silicate of soda, xii, 90
Soaps, xvii, 155
Soda, xii, 139; xiv, 173; xv, 286
acetate of, x, 156
alums, x, 148
ash, xiv, 173
arsenias, x, 132
bicarbonas, x, 130; xvii, 343
carbonate of, x, 145; xii, 118
caustic, xi, 117
chloras, xii, 120
from cryolite, xi, 117
hypochloris, x, 130
hyposulphate, xii, 121
hyposulphis, x, 145; xi, 118; xii, 121
manganate of, x, 148
manufacture of, x, 117
and mineral water apparatus, xvii, 296
nitrate of, x, 127; xii, 139
phosphas, xvii, 343
preparations, xv, 276
sulphate of, x, 145
sylvino-abietinas, xi, 105
urate, x, 158
valerianas, xvii, 343
Sodii chloridum, xi, 103
Sodio-phosphate of zinc, xvi, 229
Sodium, x, 145; xi, 117, 162; xii, 139; xiii, 121; xiv, 172; xv, 210; xvi, 221; xvii, 210
amalgam, xiv, 172
process, xv, 148
ammonium, xiv, 175
arseniate, xvii, 211
Sodium, carbonate, xvii, 211
chloride, x, 145; xii, 118; xvii, 212
syrup, x, 79
and ferric pyrophosphate, xvii, 224
hypochlorite, xvii, 212
monoxide, xvii, 210
peroxide, x, 117
Soil, x, 175
Solanaceæ, x, 115; xi, 91; xii, 108; xiii, 114; xiv, 162; xv, 184; xvi, 190
Solaneæ, x, 163; xii, 108; xvii, 171
Solania, x, 163
constitution of, ix, 118
Solanina, xi, 153
Solanum dulcamara, x, 116
lycopersicum, xi, 91
nigrum, x, 116
paniculatum, xiv, 162; xv, 184
pseudo-capsicum, x, 115; xii, 108
tuberosum, xi, 92; xvi, 190
Solidified creasote, x, 86
Soluble aniline blue, xv, 246
citrate of magnesia, xiv, 149
iodide of sulphur, xi, 116
Prussian blue, xv, 227
silicate of lime, ix, 110
Solubility of alkaloids in chloroform, ix, 99
olive oil, ix, 99
camphor in water, xii, 212
indigo, xvii, 266
metallic oxides in alkaline citrates, xii, 154
paraffin, ix, 114; xiii, 131
in benzol, xiii, 131
in chloroform, xiii, 131
phosphate of iron, ix, 108
phosphorus in bisulphide of carbon, xvii, 207
quinine, xvii, 258
resins, sugar, and gums in alcohol, x, 70
starch, ix, 123
Solution of acetate of ammonia, xii, 76; xiv, 226
arsenite of potassa, xiv, 150

Solution of atropia glycerinea, x, 70
bimeconate of morphia, xv, 382; xvi, 164
caffeina in chloroform, xvi, 166
chromate of copper, xv, 163
citrate of magnesia, xii, 77; xv, 164; xvi, 165
magnesia cum magnesiæ sulphat., xvi, 165
gutta percha, x, 71
indigo in sulphuric acid decolorized by volatile oils, ix, 116
meconate of morphia, xv, 165
morphia in chloroform, xvi, 165
oxide of copper in ammonia, ix, 106
oxide of iron, xvi, 167
peracetate of iron, xv, 165
permanganate of potassa, xii, 77
pernitrate of iron, xv, 165
pyrophosphate of iron and soda, xvi, 166
strychniæ phosphatis, x, 70
sulphurous acid, xii, 88
strychniæ phosphatis, x, 70
Solutions, x, 69; xi, 62; xii, 75; xiii, 109; xv, 163; xvi, 164
in alcohol, x, 70
ether and chloroform, x, 71
of hydriodic and phosphoric acids, xiv, 149
in oils, x, 71
on oils, xii, 281
Solvents of phosphorus, xvii, 208
Some principles in convallaria majalis, ix, 117
remarks on a systematic quantitative analysis of alkaloids, x, 238
Sophisticated oil of amber, xiii, 57
Sophistication, ix, 98
Sorbin, xi, 146
Sorghum saccharatum, xv, 191
Soup for children, xiii, 142
Source of balsam Peru, ix, 93
Source and quality of commercial vinegar, xvii, 367
of the varieties of cinnamon, xvii, 182
Southern prickly ash bark, xii, 270
Spanish publications, xv, 137
Sparteina, xi, 149
Spatula, stirring rods, &c., xii, 241
Special reports, ix, 146
and essays, x, 195; xi, 196; xii, 206; xiii, 149; xiv, 201; xv, 336; xvi, 378; xvii, 355
Species aromatica, xvii, 374
ad decoctum lignorum, xvii, 374
ad infusum pectorale, xvii, 374
hispanicæ, xi, 69
laxantes, St. Germain, ix, 102; xvii, 374
Specific gravity of aqueous solutions of tartaric acid, xi, 204–206
bottle, new, described by Dr. Squibb, xvii, 41
of chloroform, xvii, 238
diamond graphite and charcoal, ix, 114
gas and vapors, xv, 148
liquids, xiv, 147
medicinal chloroform, xiv, 264
tinctures, xvii, 159
Specimens of boxes for ointments and salves described, xvii, 120
exhibited, xiii, 65
of false so-called benzoin, xi, 34
of hydrastis Canadensis sold for serpentaria, xv, 92
illustrating paper on protective power of glycerine to prevent apotheme, xiii, 56
Spectral analysis, x, 177; xi, 169
Spectrum analysis, xiv, 184; xvi, 146
microscope, xvii, 138
Spencer's atmospheric filter, xiv, 145
Spent hops, adulterated, x, 189

Spermædia clavus, x, 120; xi, 97; xii, 115
maydis, x, 122
Sphærococcus lichenoides, xi, 98
Spices, ground, xii, 74
Spigelia, xi, 185
Spirit. ammoniæ arom., xii, 307; xv, 166; xvii, 343
Spirits, xii, 77, 285; xvi, 167
essences, &c., xv, 166
ætheris compos., xi, 190
ether nitros, x, 71; xv, 166; xvi, 167; xvii, 343, 374
ferri chlorati æthereus, xvii, 374
formyli terchloridi, xi, 64
frumenti, x, 135
lavandulæ compos., xii, 309; xvi, 167; xvii, 343
medicinal, xii, 305
nitre, xv, 274
newly distilled, x, 70
ophthalmicus, Himly, x, 71
saponis, xi, 64
sinapis, xi, 64
tinctures and, xi, 60, 64
Spondiaceæ, x, 99
Spondias dulcis, xvi, 182
myrobalanus, x, 99
venulosa, x, 99
Sponges, xii, 118; xvi, 328
Spontaneous decomposition of chloride of lime, ix, 109
Spurious gum, xvi, 205
Squibb, Dr. E. R., on bleaching morphia, x, 218
carbolic acid, xvi, 429
commercial jalap, xv, 93, 380
contamination of hydrochloric acid with sulphur oxides, xvi, 409
economy of alcohol in percolation, xiii, 201
explains that percentage always refers to weight in United States Pharmacopœia, xiii, 76
on hydrocyanic acid, xvi, 419
Squibb, Dr. E. R., improved process for fluid extract of buchu, xiv, 81
on press cloths, xiv, 42
on rhubarb, xvi, 452; xvii, 398
remarks on revenue law, xiii, 84, 88, 90
remarks on sale of poisons, ix, 50
remarks on specimens of indigenous drugs, xv, 459
remarks on subject of alcohol, ix, 24, 26
remarks on vacuum apparatus, xiii, 75
on repercolation, xv, 93, 391
report on drug market, xi, 175
report on internal revenue law, xiv, 50, 88
report on Pharmacopœia, xvii, 298
views on oleum ætherum, ix, 147
on virgin scammony, x, 214
Stabler, R. H., on press, xii, 249
Stains on silk, xiii, 142
Standing committees, new, recommended, xii, 22
new, created, xii, 45, 46
and permanent committees, ix, 3; x, 3; xi, 9; xii, 5, 6; xiii, 5, 6; xiv, 5, 6; xv, 5, 6; xvi, 4; xvii, 4
Stannate of soda, xvi, 234
Stanni chloridum, xi, 102
oxychloridum, xi, 102
Stannic oxide, xi, 125
Stanni phosphas, xi, 102
tannas, xi, 102
Starch, x, 168; xi, 143; xii, 187; xiv, 181; xv, 194, 257; xvi, 277; xvii, 244

Starch, an absorbent of coal oil colors, xii, 160
in the animal economy, ix, 120
in seeds, xi, 157
in unripe fruit, xii, 165
sugar, xiii, 135
Starches, x, 168; xii, 165
separation of, from seeds, xii, 180
Stassfurthite, xi, 117
Statement of exports of drugs to foreign countries, xvi, 319
imports, xvi, 308
re-exports, xvi, 317
receipts and expenditures, xvii, 38. (See Treasurer's report.)
Statice latifolia, xi, 90
Statistics and assays of scammony, x, 214
of indigenous medicines, ix, 95
United States Army Laboratory at Philadelphia, xiv, 272
Status of pharmacy in province of Ontario, xvi, 337
the United States army and navy, xvi, 343
Steadine, x, 83
Steam, action of, on iron, xi, 102
apparatus, xi, 59
query on, xi, 41
generator, xvi, 145
Stearate of iron, x, 84
Stearns, Frederick, on æsthetical pharmacy, xi, 266
case of, postponed, xvii, 98
on crop of peppermint in Michigan, xiii, 221
defence of, xvii, 100
expulsion of, xvii, 112
on native wine from rhubarb, xiii, 221
on pharmaceutist as a merchant, xii, 216
Stearns, Frederick, on pharmaceutical business, xiv, 42, 201
on production of alcohol in the United States, ix, 160
remarks on sale of poisons, ix, 57
remarks on taking President's chair, xiv, 39
resolution to promote attendance of members at St. Louis, ix, 40
resolution in reference to certificate, ix, 31
views on communication from East River Medical Association, xvi, 63
Stearoptenes of parsley-water, x, 162
spirit of juniper, x, 162
Steel and cast iron, x, 149
theory of, xii, 144
Stenanthium frigidum, xvi, 201
Sterculiaceæ, xi, 78; xvi, 178; xvii, 186
Sterculia fœtida, xi, 78
Sterculiaria tragacantha, xvii, 186
Stevens, A. M., deceased, ix, 7
Stevens, R. W., " xvi, 21
Sticky plasters, x, 84
Still for apothecaries' use, xi, 207, 208
by C. O. Curtman, xvii, 137
for pharmaceutic uses, xi, 210, 211
continued to Dr. Squibb, ix, 40
Stirring rods, xii, 144
St. Louis medical spring, xvii, 418
Pharmaceutic Association, ix, 67; x, 174, 193; xii, 187; xiii, 148
College of Pharmacy, xiii, 148; xiv, 200; xvi, 267
Stock of Proceedings, x, 14; xi, 22; xii, 20; xiii, 25; xiv, 23; xv, 29; xvii, 24
Stoppage of bottles, xvii, 305
Stopper for bottles, xii, 70
Stoppers prevented from adhering by paraffin, x, 67

Stramonium, xi, 91
cones, x, 82
Strontia, x, 175
Strychnaceæ, active principles of, xi, 248
Strychnia, x, 137; xi, 107, 151; xiv, 191; xv, 197, 244; xvi, 262; xvii, 320
antidotes, xii, 129
and brucia, ix, 122
chemical reactions of, ix, 128
in woorari, ix, 126
tests for, ix, 129
Strychnos alkaloids, xvii, 262
nux vomica, xvi, 292; xvii, 170
tieute, xi, 92
Study of German recommended, xvii, 272
Styptics, xii, 89
Styraceæ, x, 108, 187; xii, 106
Styrax benzoin, x, 108; xii, 106
Styria, arsenic eaters of, ix, 129
Styrolene, xvi, 272
Subarseniate of strychnia, xi, 151
Subarsenite of strychnia, xi, 151
Subject of life membership, xi, 35
new certificate indefinitely postponed, x, 39
prizes postponed, ix, 45
dropped at present, x, 39
Sublimation of alkaloids, xiii, 134; xvi, 258
Subnitrates of bismuth, x, 153; xv, 222
Suboxide of copper, xii, 145
silver, xi, 127
Substances, insoluble, examination of, for alkalies, xiv, 186
and preparations recommended for introduction into the United States Pharmacopœia, xvii, 372
Substitutes for alcohol and ether in the preparation of officinal oleo-resins, xiv, 208
Indian ink, xiii, 142
tinctures, x, 72
Succinates, xvi, 248
of peroxide of iron, xvi, 207
Succinic acid, x, 157; xi, 138; xvi, 248; xvii, 250
Succus liquirit. depur. liquid., xvi, 159
Sugars, x, 187; xiii, 116; xv, 197, 257; xvi, 278
Sugars, beet-root, ix, 115
in blood, x, 170
coating pills, xv, 159
query on, xiii, 79
estimation of, xii, 181
non-polarizing, xii, 163
and other substances, xii, 181
in sulphate of quinia, ix, 114
syrups, x, 78
urine, x, 173
Suicides, ix, 124
by acetate of morphia, x, 125
Sulphamylic oxide, xvi, 270
Sulphate of alumina, xv, 213
ammonia, ix, 23, 153; x, 146; xiv, 174
amount used in United States, ix, 154
Sulphates of antimonious oxide, xvii, 227
atropia, xi, 152; xii, 130; xiii, 132
by hypodermic injection in rheumatism, ix, 94
baryta, xii, 141
beeberina, xv, 197
cadmium, x, 150
cinchonia, xi, 183
cobalt, xv, 216
copper, xi, 150; xii, 89
lead, xv, 219
lime, x, 147
magnesia, xv, 213; xvi, 222
manganese, xiv, 249; xv, 215; xvi, 227
free from iron, ix, 112
manganous oxide, x, 148
potash and soda, ix, 109
pseudo-morphia, xvi, 260
quinine, x, 163; xi, 182
soda, x, 145; xiv, 173; xv, 210
sanguinarina, xi, 219
thallium, xvi, 233
zinc, xiv, 177
Sulphide of allyl, xv, 255
ammonia, xv, 211
amyl, xv, 250
butyl, xv, 250
butyl amyl, xv, 250
calcium, xv, 211; xvi, 223

Sulphide of lead, xiii, 125
magnesium, xvi, 224
mercury, xii, 150; xiv, 179; xv, 223
pallad-ammonium, xvi, 239
Sulphides, xvi, 213
of carbon, xv, 207
cobalt, xvi, 228
Sulphite of lime, x, 147
magnesia, xii, 142; xv, 213; xvi, 224
platinum, xv, 226
Sulphites, xi, 101; xii, 145; xvi, 209
Sulpho-acetic acid, xiii, 129
benzolates, xv, 235
benzolic acid, xv, 235
cyanides, xvi, 241
of ammonium, xi, 129; xii, 140; xv, 228
cyanide of atropia and gold, xvi, 262
cobalt, xvi, 242
iron, xvi, 242
mercury, xv, 228
morphia, and zinc or tin, xvi, 259
potassium, xiii, 120
and cyanide of mercury, xv, 228
and mercury, xvi, 241
and iodide of mercury, xvi, 242
and gold xvi, 262,
quinia and tungsten, xvi, 262
quinia and zinc, xvi, 262
thallium, xvi, 243
tungsten, xvi, 242
uranium, xvi, 242
phenates, xvii, 235
phtalic acid, xvi, 257
Sulphur, x, 141, 178; xi, 101, 113, 120, 160; xii, 118, 135; xiv, 169, 187; xv, 192, 194; xvi, 208, 213; xvii, 201
action of, on ammonia and its compounds, xv, 201
Sulphur, compounds of uranium, xvi, 216
Sulphurets, xi, 125
of antimony, x, 80
Sulphuretted hydrogen, xiv, 170
Sulphuric acid, x, 141; xi, 113; xii, 135; xiv, 184; xv, 202; xvi, 214; xvii, 203
arsenic in, xi, 255
purification from arsenic, ix, 106
Sulphur lotum, x, 128
Sulphurous acid, x, 141, 179; xi, 113; xii, 77; xv, 194; xvi, 214; xvii, 203
powder, x, 68
Sulphur with arsenic, xi, 101
Sulphydric acid, xv, 194, 201
Sunday trade, ix, 76
question, ix, 14
resolution, ix, 64
Sundries, xvii, 297
Superiodides of the alkaloids, xvi, 259
Supersulphide of chromium, x, 152
Suppositories, x, 82; xi, 70; xv, 167; xvi, 168; xvii, 157
of assafœtida, xvi, 168
moulds, xv, 139
Surgical disinfectants, ix, 89
instruments of aluminium bronze, xii, 143
Suspended list committee, x, 24
Sus scrofa, xi, 99; xii, 160; xiv, 165; xvi, 116
Sweet gum tree, xii, 222
spirits of nitre, xi, 189; xii, 127; xv, 83, 383; xvii, 156
price of, xi, 190
Swiss Pharmacopœia, ix, 75
Syllabus of a course of study and manipulation, xii, 279
Sylvin, xvi, 209
Symplocarpus racemosa, xi, 87
Synthesis of acetic acid, ix, 120
carbohydrides, xi, 130
Syphon filter, xvii, 139
Syringa vulgaris, xi, 93; xv, 185
Syringenin, xi, 93
Syringo-picrin, xi, 93
Syrup against diarrhœa, xvi, 171
amygdalæ, x, 79
assafœtida, x, 79
chloroformi, x, 79; xii, 83; xiii, 109
copaiba, xi, 66; xii, 81
copaiba and syrup of cubebs, xiv, 152

Syrup from extracts, xv, 167
ferri carbonatis, xi, 66
iodidi, x, 79; xii, 82; xvi, 170; xvii, 343
pyrophosphatis, x, 79
of ferrous iodide, xvii, 158
fuci vesiculosi, xi, 66; xii, 82
and fluid extract of ipecacuanha, ix, 103
of hypophosphite of iron, xvi, 170
iodohydrargyrate of iron, x, 70
iodide of iron, ix, 102
ipecacuanha, xv, 167
iron and cinchona, xii, 83; xiii, 109
lactucarii, xiv, 151; xvi, 96, 399
opiat., xii, 82
and other syrups, ix, 98
limonis, xii, 82
of lime, xv, 169
manna, xi, 66
opiatus, x, 79
de pepsin, xiv, 152; xv, 168
of pepsin and bitter orange-peel, xv, 168
phosphates of iron, quinia, and strychnia, xv, 168; xvi, 169
rhei aromat., xvii, 344
rubi idæi, x, 79
of sanguinaria, xi, 220
terebinthinæ, xi, 67
tolutani, xi, 67
Syrups, xi, 66; xii, 81; xiii, 109; xiv, 151; xv, 167; xvi, 169; xvii, 158
new method of preparing some, ix, 96
preservation of, xi, 62
Syrup santonin, x, 79; x, 11, 82
senegæ, xv, 342; xvi, 171
senna cum manna, xvii, 374
sodii chloridi, x, 79
of tar, ix, 97; xvii, 158
terebinthinæ, x, 67
tolutani, xi, 67
of violets, xvii, 158
Systematic classification of elementary substances and their compounds, xvii, 132

Table of contents, ix, 11; x, 1, 2; xi, 13, 14; xii, 9–11; xiii, 9–11; xiv, 9–11; xv, 9, 13; xvi, 10–14; xvii, 10, 15
Tables of morphia per cent., and drying loss of opium, ix, 104
Table of qualitative analysis, ix, 111
showing differences between the articles officinal in both United States and Prussian Pharmacopœia, xvii, 375, 378
Tabular statement showing number of members in each State, xiv, 36
Tacamahac resin, xvi, 192
Tacca pinnatifida, xvi, 203
Talcahuano Arrowroot, ix, 93
Tamarindus occidentalis, xvii, 180
Tamarix mannifera, xi, 70
Tanacetum vulgare, xvi, 187
Tannate of bismuth, ix, 95, 105
of manganese, xiv, 166
zinc, xi, 139
Tannic acid, x, 158; xii, 126, 179; xv, 236; xvi, 249; xvii, 250
and gallic acids, xii, 179
acid in Chinese galls, xvii, 251
in vegetables, xvii, 252
Tannin, x, 186
of hops, ix, 115
Tanno-arsenic acid, xi, 107
Tantalum, xiv, 178; xv, 220
Tapioca, xiv, 193
Taraxacum dens-leonis, xi, 90; xii, 106
Tarnished silver cleansed, xv, 148
Tartaric acid, x, 157, 186; xi, 138; xiv, 188; xv, 231, 283; xvi, 245; xvii, 253
Tartar emetic, xi, 139; xiii, 127; xv, 285
Tartrate of antimony and potassa, xi, 139
lime, x, 157
pseudo-morphia, xvi, 260
thallium, xvi, 245
Tartro-citric lemonade, ix, 104
Tartromel of iodide of iron, xii, 82
Taushan or Taushardy opium, xvi, 175
Taylor, A. B., aqueous extract of jalap, xii, 215
fluid extracts, xvii, 390
preparations of cinchona, xii, 206
preservation of volatile oils, xi, 212
tinctures of gum resins, xvii, 381
use of glycerine, &c., xiii, 156

Taxaceæ, xi, 94
Taxus baccata, xi, 94
Tea tree in India, ix, 91
Teething syrup of Delabarre, xvi, 171
Tegedaria domestica, x, 126
Tellurium, xiii, 127
Terchloride of iodine, xv, 204
Tercyanide of phosphorus, xii, 136
Terebinthaceæ, xvi, 182
Teriodide of sulphur, xi, 116
Ternary alkaloids, x, 162
Ternitrate of bismuth, xi, 126
Ternstromiaceæ, x, 97; xv, 176; xvi, 184
Terra alba, xvi, 210
Testa præparata, xvii, 325
Test for atropia, xii, 162
cyanides, xii, 125
free acids, xvi, 147
gold, x, 155; xiii, 128
grease, xii, 94
Testing chloroform for alcohol and ethers, xvii, 239
for salicin, xvii, 258
Test for iron in copper, xii, 143
liquids founded upon cohesion figures, xii, 94
liquor ammoniæ, xvii, 213
methylic alcohol in ethylic alcohol, xiii, 128
muriate of cinchonia, xiii, 133
nickel, xiii, 125
nitrate of silver, x, 154
nitric acid, xvii, 194
orange-flower water, xiv, 148
otto of roses, xiv, 192
ozone, xii, 132
paper, xii, 71; xv, 149
for purity of oil of peppermint, xvii, 151
resin of cannabis indica, xii, 244
salicin in quinine, xvi, 260
strychnia, ix, 129
sulphurous acid and lower nitrogen oxides in sulphuric acid, xvii, 204
tartrate of lime, x, 36
tinctures and wines, x, 72
vanadiates, xii, 147
urines, xvii, 160
Tetanus treated by woorari, ix, 94
Tetrachloride of carbon, xvi, 207
Tetrad metals, xvii, 220
Tetratomic and bibasic acids, xvii, 253
monobasic acids, xvii, 250
tribasic acids, xvii, 254
Time of meeting fixed, ix, 39; x, 43; xi, 36; xii, 40; xiii, 75; xiv, 68; xv, 105; xvi, 110; xvii, 100
Thallic acid, xv, 219
Thallium, x, 141; xi, 124; xii, 137; xiii, 121; xiv, 175, 183, xv, 219; xvi, 232
amalgam, xvi, 232
Thanks voted L. Anderson and Dr. O M. Langdon, xii, 53
Cincinnati College of Pharmacy, xii, 53
entertaining members, ix, 58; x, 48; xi, 48; xii, 53; xiii, 81; xiv, 80; xv, 120; xvi, 121; xvii, 114
to Ex-President Stearns, xv, 40
to judges of Supreme Court for use of room, xiv, 80
officers, ix, 65; xi, 48; xii, 53; xiv, 39; xvi, 120
New York Medical College for tender of rooms, ix, 33
reporters, xiii, 96; xiv, 80; xv, 121; xvi, 121
J. H. Slade, phonographer, xv, 121; xvi, 120
T. S. Wiegand, for Index, x, 29
Mr. Neynaber, xiv, 60
Thea Bohea, x, 97
Chinensis, xv, 176; xvi, 184
The amyloid substance in the liver, xii, 170
Thebaina, xvi, 176
Thebolactic acid, xiv, 180
Theina, xvi, 264
Theine, xiv, 190
compared with caffein, xvi, 184
Thein in the kola nuts, xiii, 134
The microscope in crystalogy, xvi, 147
Theobroma cacaô, ix, 41, 188; x, 99; xii, 97; xvi, 178
Theobromina, x, 164
Theory of steel, xii, 144
The pharmacist as merchant, xii, 216
Therapeutic effect of iodide of sodium, xiii, 137
Therapeutics of phenol., xvii, 236
Therapeutic properties of sarsaparilla, ix, 89
value of sanguinaria acetate and sulphate, xi, 214, 222

Thermoterion, xv, 140
Thevetia neriifolia, xvii, 170
Thionessal, xvi, 271
Thiosinnamide, xv, 247
Thomas, Dr. R. P., on garlic, ix, 178
sanguinarina, xi, 214
obituary, xii, 24
Thompson, W. S., on preservation of ointments, xiii, 175
Thomsen, J J., report on drug market, xii, 200; xv, 238
Three years in Turkey, ix, 80
Thymelaceæ, xi, 86; xvi, 195
Thymus serpyllus, xi, 90
Tifan, xvi, 192
Tiliaceæ, xv, 175; xvi, 179
Time of meeting fixed, ix, 39; x, 43; xi, 36; xii, 40; xiii, 75; xiv, 68; xv, 105; xvi, 110; xvii, 100
Tinctorial properties of albumen, ix, 116
Tinctures, x, 72; xiii, 110; xv, 169; xvi, 171; xvii, 159, 344
and spirits, xi, 60, 64; xii, 77; xiv, 150
Tinctura aconiti radicis, x, 73
aloes, xii, 88
ambræ, x, 74
arnicæ, x, 73
benzoini, xv, 170
cacti grandiflori, xvi, 171
Calabar bean, xvii, 185
cardomomi composita, xvii, 344
chinoidei, xvii, 374
cinchonæ, x, 73
ferratæ, x, 73; xvi, 171
colchici, x, 73
colocynthidis, xvii, 374
Fabarum St. Ignatii, x, 74
ferri acetici ætherea, xvii, 374
chloridi, x, 70; xiv, 150, 250; xv, 170, 361; xvi, 172; xvii, 344
pomata, xvii, 374
protochloridi, x, 70
gentianæ comp., x, 73
ignatiæ amaræ comp., x, 73
iodinii, x, 70
composita, xvii, 344
decolorata, xvi, 172; xvii, 160
ipecacuanhæ, xvii, 375
lycoperdon, xv, 170
moschi, x, 73
Tinctura nucis vomicæ, x, 73
odontalgica, xv, 170
opii, xiii, 100; xvii, 345
deodorata, xv, 170; xvii, 345
rhei aquosa, xvii, 375
vinosa, xvii, 375
secalis cornuti, x, 74
valerianæ acetata, x, 74
ætherea, xvii, 375
et cerii oxalas, xiv, 150
Tincture of hundred-leaved roses, xv, 171
Tinctures weak in alcohol, xv, 169
Titanic acid, xiv, 184; xv, 220; xvi, 235
Titaniferous ores of Canada, ix, 112
Titanium, xii, 146; xiv, 178; xv, 220; xvi, 235
Tin, x, 151; xi, 125, 164; xiv, 177; xv, 220; xvi, 234
Tinfoil, xvii, 163
leaded, x, 191
Tin ore of Durango, xiv, 177
Tobacco adulteration, x, 189
against rattlesnake bite, ix, 127
its combustibility, ix, 90
history and associations, ix, 81
Toddalia aculeata, xi, 81
To detect tartaric in citric acid, xvii, 254
adulterations in oil of turpentine, ix, 115
distinguish cotton from linen, xiv, 154
wool from silk, xii, 93
between genuine and fictitious brandy, xii, 78
establish presence of alkaloids, xiv, 191
improve the taste of cod-liver and castor oils, ix, 99
Tokay wine, analysis of, ix, 122
Toluidine, xii, 160
Toluol, xvi, 274
Toluylic, xv, 235
Tomatoes, dropped at request of member to whom it was referred, xiv, 56
To prepare sulphate of manganese free from iron, ix, 112
prevent paper from adhering to plasters, xii, 87
purify assafœtida, galbanum, and other gum resins of this family, xii, 102

To stain wood to resemble mahogany, xiii, 142
test amount of water in starch, xvii, 245
Topoucouna oil, ix, 92
Tourtelot, Francis I., on extract of beef, xvi, 465
Toxicology, ix, 124
Trade, xvi, 295
Tragacanth, ix, 90
Transfer of oxygen in the body, xii, 170
Transformation in the living plants, x, 175
of lactic into propionic acid, ix, 120
nitrate of soda into nitrate of potassa, xiv, 173
nitrous oxide into nitrate of ammonia, xiv, 169
starch in glucose and dextrine, ix, 115
tannic into gallic acid, xvii, 252
Treasurer's report, ix, 20; x, 24, 25; xi, 33; xii, 31; xiii, 38, 39; xiv, 53, 54; xv, 30; xvi, 38, 40; xvii, 37
postponed to next session, xiv, 37
Treatment of acne, xiii, 140
Trianosperma ficifolia, xi, 76
Triatomic alcohols, x, 161
and ethers, xvii, 237
Trichlorobenzole, xv, 254
Trichlorodracylic acid, xvi, 255
Trichobasis antherarum, xi, 97
foliorum, xi, 97
Trifolium, xi, 83
pratense, x, 103
Triglycolamideacid triamid, xv, 248
Triglycolamidic ether, xv, 250
Trimethylamina, xi, 105
Trisnitrate of bismuth, arsenic in, ix, 128
Trithionic acid, xiv, 170
Triticum hybernum, xv, 191
repens, x, 120
Trochisci, xi, 69
cubebæ, xvii, 346
glycyrrhizæ, xi, 69
cum ammoniæ muriat., xi, 69
Tufts, Mr., remarks on cryolite, xv, 81
finances, xvii, 115
report as treasurer, xiv, 53; xv, 30; xvi, 38; xvii, 37
Tungstates, xvi, 235
Tungstate of magnesia, xvi, 235
Tungsten, ix, 108; x, 152; xii, 147; xiv, 178; xv, 221, xvi, 235
Tungstic acid, x, 152
ether, xv, 249
Turkey or Russian rhubarb, xv, 284
Turpentine camphor, xv, 256
as fuel, xv, 144
Turpethine, xv, 261
Tussilago farfara, x, 111
Two new pharmaceutical associations represented, xvii, 25
Tyrosina, xii, 162
Tyrosine, x, 172

Ulmates, x, 175
Umbelliferæ, x, 98; xi, 75; xii, 101; xv, 179; xvi, 180; xvii, 185
Unclassified organic compounds, xvii, 266
Uncrystallizable atropia, ix, 116
United States Cabinet of geology and mining, xvii, 422
and Pennsylvania laws about liquor dealing by apothecaries, xvi, 350, 351
pharmacy in, xvii, 271
Unity in variety as deduced from the vegetable kingdom, ix, 81
Universal cement, xiv, 155
Pharmacopœia, xvi, 33
Unguenta, xvii, 347
Unguentum aquæ rosæ, xv, 388
belladonnæ, xi, 68
cadmii iodidi, x, 83
cantharidum, xvii, 375
digitalis, xi, 68
glycerinæ, xvii, 375
hydrargyri, x, 83; xi, 68
nitratis, x, 83; xi, 68; xvii, 347
oxidi, x, 83
iodinii comp., x, 84
mezerei, x, 68; xvii, 375
plumbi iodidi, x, 83, 84
potassii iodidi, x, 84
Unwholesome yeast powders, ix, 139

Uranium, xv, 216
bifluoride of, xv, 217
estimation of, xii, 179
salts, xv, 217
sulphur compounds of, xv, 216
Urari curare, x, 116
Urate of lithia, xi, 137
quiniæ, ix, 100; x, 164
soda, x, 158
Urban guano, x, 176
Urea, x, 162; xi, 169; xii, 158; xiv, 182; xvi, 264
in milk, xiv, 182
Uric acid, xv, 239; xvi, 257; xvii, 257
concretions, xii, 172
and derivatives, xii, 154
prepared from guano, xvii, 257
Urine, x, 173; xi, 170; xii, 171; xiv, 182
analysis of, xvii, 257
bile in, xiv, 189
diabetic, xiv, 193
gases in, xii, 172
of herbivora, xi, 171
indican in, xii, 171
putrefaction of, xii, 171
salicin in, xii, 172
sugar in, x, 173
Urinometer, x, 90
Urticaceæ, x, 105; xi, 84; xii, 111; xv, 187; xvi, 197
Urtica dioica, xv, 187
Usages and laws pertaining to drug business, xvi, 299
Use of benzoin in ointments, xv, 385
ozone in ventilation, xii, 132
permanganate of potassa in deodorizing alcohols, xvi, 114, 393
potassa in some cutaneous affections, ix, 92
Utilization of brine, xiii, 143
from pickled meat, xv, 150
gas waste, xvi, 152
peat, xvi, 152
Uvaria odorata, xv, 175

Vaccinaceæ, xi, 87
Vaccinium myrtillus, x, 107
Vacuum filter, A. B. Spencer's, xiii, 55, 178
Vaginal suppositories, xvi, 168
Vahea senegalensis, xi, 93
Valerianaceæ, x, 113, xv, 182
Valeriana officinalis, x, 113; xv, 182
Valerian, xiv, 231
Valerianate of ammonia, xiii, 135
atropia, ix, 97
iron, xi, 137; xv, 234
oxide of amyl, xvi, 270
zinc, xv, 231
Valerianic acid, ix, 105; xvi, 247; xvii, 248
root, xi, 185
Valerin's injection in dysentery, x, 86
Valuation of cinchona, xii, 105
indigo, xii, 166
Vanadium, xii, 147
Vanillaceæ, xi, 95
Vanilla aromaticum, xi, 95; xii, 113
Van Sweringen, H., on pharmacy, xvii, 412
Vapor of water a disinfectant, xii, 133
zinc, xiv, 146
Varieties of garlic, ix, 23, 178
Various grades of cacao, xv, 351
Vatting of wine, xii, 98
Vehicle for quinine, xvii, 258, 395
Vegetable and agricultural chemistry, xi, 153; xii, 172
chemistry, xv, 265; xvi, 285
coloring matters, ix, 113
drugs, xii, 95; xv, 172; xvi, 172, 308
gelatine, xi, 156
oils and fats, ix, 104
natural soap, xv, 178
parchment, ix, 119
tallow, ix, 89
Vegetation, xi, 155
Veratria, x, 137, 163; xi, 107, 108; xii, 161; xvi, 201; xvii, 320
Veratric acid, x, 158
Veratrum, x, 119
album, xii, 114
frigidum, xvii, 189
nigrum, x, 119
viride, ix, 88; x, 119; xi, 95; xii, 114; xiv, 164; xv, 360; xvi, 201
et album, xvii, 167
and its alkaloids, xv, 62
Verbal report of committee on code of ethics, xvi, 102
on specimens, xvi, 121
Verbascum thapsus, x, 115
Verbenaceæ, xvi, 190
erinoides, xvi, 190
littoralis, xvi, 190
Vermilion, x, 153
Vermin ointment, xvi, 153

Vesicating collodion, x, 71
Veterinary pharmacy, ix, 79
Viburnum lantana, xii, 102
prunifolium, xv, 180
Villaresia mucronata, xvi, 189
Vine in California, xii, 98
Vinegars, x, 76; xii, 79; xiv, 152; xv, 230; xvii, 190
Vineyards, products and profits of, ix, 90
Vinum antilymphatic, x, 75
aromaticum, x, 74
chloroformique, x, 74
colchici seminis, x, 74
ergotæ, xvii, 347
ferri amarum, x, 74
et quinæ citratis, x, 74
opii, x, 74
pepsicum, xvi, 172
Virginia law about adulteration of medicine, xvi, 352
Viridina, xi, 149
Viridinic acid, xvi, 251
Viscum album, ix, 89; x, 117
guericum, ix, 89
Vitaceæ, x, 95; xii, 98; xiv, 160; xv, 175; xvi, 180
Vitellus ovi, xv, 192
Vitis, xiv, 160
vinifera, xvi, 180
Vitrifying iron surfaces, xvi, 151
Viverra civetta, x, 133
Volatile oils, xi, 132; xii, 79; xiii, 135; xv, 198, 256; xvii, 151
and resins, x, 161; xii, 157
of nutmegs, xii, 157
Peru balsam, xvii, 152
Volatility of anhydrous phosphoric acid, ix, 111
Volcanic ammonia, xiv, 169
Volumetric analysis, xi, 168; xvi, 147
determination of alumina and phosphoric acid, xiv, 186
determination of sulphuric acid, xvii, 205
determination of tannic acid, xvii, 252
estimation of copper, nickel, and zinc, xii, 178
estimation of iron, xii, 178; xiv, 187
estimation of iron and manganese, xii, 179
estimation of manganese, antimony, and uranium, xii, 179
Volumetric estimation of mercury, xii, 178
test for silver, xiv, 188
Volunteer papers, also volunteer reports and essays, ix, 42, 210–225; x, 38, 214; xi, 42; xii, 42, 273–318; xiii, 60, 189–224; xiv, 77, 237, 272; xv, 77, 377–407; xvi, 118, 420–468; xvii, 97, 386–422
Vote of thanks to entertaining members, ix, 58; x, 48; xi, 48; xii, 53; xiii, 81; xiv, 80; xv, 121; xvi, 121; xvii, 114
officers, ix, 65; xi, 48; xii, 53; xvi, 120
reporters, xiii, 96; xiv, 80; xv, 121; xvi, 121
Schaefer and Koradi, ix, 22
J. H. Slade, xv, 121; xvi, 120
Vote for treasurer to sign certificate, xv, 74
Vulnerary ointment, xvi, 153
Vulpinic acid, ix, 116

Wadgymar Arthur, on hyoscyamia, xv, 404
Wafers, x, 190
color of, xvii, 163
Wafer envelopes, x, 81
paper, xiii, 143
Wash, Beyran's, x, 68
Washes, xii, 88; xvi, 159
Washing of precipitates, xvii, 139
Brady's apparatus for, xvii, 137
Bunsen's, xvii, 137
gelatinous precipitates, syphon filter for, xvii, 137
Washington Pharmaceutical Association, xi, 174
Water, x, 139; xi, 109, 157; xii, 133; xv, 201; xvi, 213
action of, on lead, xii, 71
in compound ethers and alcohols, xii, 155
determined in organic substances, xiii, 139
ebullition of, xii, 133; xvii, 192

Water, examination of, xvii, 193
as fuel and illuminating material, ix, 110
glass, xi, 112
Mr. Fuchs's essay on, ix, 107
organic matter in, xvi, 213
proof dressing for shoes, xiii, 143
putty, xiv, 155
pure, xvii, 192
purifying, xii, 133–134
vapor of, as a disinfectant, xii, 133
Waters, analysis of sulphuretted, xii, 175
distilled, x, 68; xiv, 148; xvii, 144
medicated, x, 368
medicated, xii, 76
purification of, xiv, 168
saline, xiv, 156, 166
Watson, W. J., on cotton-seed oil, x, 237
Wax, xvi, 204
adulteration of, xii, 117; xv, 199
bees, xv, 98, 372; xvi, 204
black, xvi, 205
Canaiiba, xvii, 187
emulsion of, x, 80
Japan, ix, 89; xvi, 179
paper, x, 87; xii, 90
white, xv, 199, 273
supply of, xv, 273
yellow in ointments, xv, 78; xvi, 116, 416
Wayne, E. S., American opium, xv, 80, 378
bimeconate of morphia, xv, 80, 382
gizzard of S. American ostrich, xv, 80, 400
mata, xv, 80, 400
quicksilver in S. Carolina, xv, 80, 401
tartar American and derivatives, xv, 80, 376
Weak vision, xiii, 144
Wealth of Cavendish, ix, 237
Weight of drops, ix, 100
Weights, xv, 139; xvii, 93
decimal, xvi, 34
recommended for pharmacopœia, by President Milhau, xvi, 76
Weights and measures, x, 67; xvii, 92
decimal, legalized, xiv, 33
Weyman, G. W., obituary notice, xii, 23
Wheat phosphates, xv, 163
White, Daniel F., obituary of, xiii, 29
lead, x, 151, xvi, 232
precipitate, xvi, 210
wax, xv, 199, 273
adulterated, xv, 199
Whisky, assay of, xii, 294; xv, 273
frauds in making, xv, 49, 308
examination of, xv, 198
Whooping cough mixture of Dr. Benson, x, 80
Wiegand, T. S., on balance for apothecaries' use, xii, 316
glassware, xvii, 355
obligations of pharmaceutist, xiii, 190
report of executive committee, xiv, 20; xv, 27; xvi, 21; xvii, 21
spatulas, &c., xii, 241
spirits, x, 195
still for pharmaceutical purposes, xi, 210
Wild plants cultivated for tinctures, x, 72
Wilson George, deceased, ix, 70
Wines, x, 74; xi, 78, 133; xiv, 151; xv, 171; xvi, 172, 180, 267
ageing of, xii, 156
American, discussion on, xv, 58
red, xv, 198
sherry, xv, 198
Wine, xvi, 267
antilymphatic, x, 75
artificially colored, xii, 79
bitter of iron, xii, 234
California, analysis of, xiv, 53
angelica, xiv, 64
hock, xiv, 64
muscatel, xiv, 63
port, xiv, 63, 64
climatology, xii, 99
color of, x, 169
hygienic, xiv, 62, 65
iodine, natural, x, 75
Muscat, perle, xiv, 62
sherry, quality of, xii, 98; xiv, 78, 269

Wine, vatting of, xii, 98
of colchicum, xvii, 160
ipecacuanha, xiv, 151
pepsin, xiv, 151, 172
rhubarb, xiv, 151
tar, xvi, 172
Wisconsin law about adulteration of medicines, xvi, 352
Woollen yarn tested, x, 190
Wood naphtha, xiv, 181
preservation of, xii, 91, 152
rendered plastic, xiv, 146
spirit, xii, 156
stain for, xiii, 142
Woods, Samuel H., deceased, xvii, 22
Works relative to pharmacy in English language, x, 60; xii, 61
pharmacy in French language, xii, 64
in German language relative to pharmacy, xii, 65–68
referred to in report of progress of pharmacy, x, 53; xi, 50; xii, 56; xiii, 97; xiv, 96; xv, 196; xvi, 130; xvii, 124
Wrightia antidysenterica, xii, 109; xv, 184
Wright's Indian vegetable pills, xii, 86
Writing, indestructible, xii, 92

Xanthin, xiv, 182
Xanthina, xi, 169
Xanthorhiza apiifolia, x, 92
Xanthoxylaceæ, xi, 81
Xanthoxylon clava Herculis, xi, 81
fraxineum, xi, 81
Xylene, xvii, 230
Xyloidin, xi, 144
Xylole, xv, 254
Xylitic acid, xv, 235

Yeast, xvi, 284
beer, xiv, 181
substitutes, ix, 139
Yield of benzoic acid by sublimation, ix, 103
drugs in extract, xiii, 145
Yield of volatile oils, xii, 80
Ylang-ylang derived from unona odoratissima, xvii, 189
Yolk of eggs, x, 171; xv, 192
Yttria, xiii, 123; xv, 193

Zanthoxylum Carolinianum, xii, 271
clava Herculis, xi, 81; xii, 271
tricarpum, xii, 272
Zea mays, x, 121; xi, 96, xvi, 202
Zinc, x, 150; xi, 102; xiv, 176, 188; xv, 217; xvi, 229
acetas, xvii, 347
amalgamation of, xiv, 176
ammonio-phosphate, xvi, 229
carbonate, xvi, 229
chloride cauterizer, xv, 151
chloridum, xi, 102; xii, 124; xvii, 347
in saponification of fatty bodies, ix, 119
moulded, x, 87
coloring, xv, 148
cones of, x, 32
cyanide of, xi, 129
estimation of, xii, 17; xiv, 188; xii, 178; xiv, 188
ethyl, xii, 156
impurities of commercial, ix, 110
oxidum, x, 132, 150
phosphide, xvi, 211, 229; xvii, 218
reduces water, xiv, 177
salts of U. S. Pharmacopœia, xvii, 347
sodio-phosphate, xvi, 229
sulphate of, xiv, 177
valerianate of, xi, 105; xv, 235; xvii, 348
Zincum, xi, 102
Zingiberaceæ, x, 118; xi, 94
Zingiber officinale, x, 118
Zirconia, xiv, 183, 186
detection of, xiv, 186
reaction on turmeric, xiv, 183
reduction of, xiv, 186
Zirconium, x, 147; xiv, 186
Zoster mariana, xii, 113
Zygophyllaceæ, x, 102; xii, 97; xiii, 111

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